

SCREENING SITE INSPECTION REPORT
FOR
NATIONAL STEEL PELLET CO
KEEWATIN, MINNESOTA
U.S. EPA ID: MND071344733
SS ID: NONE
TDD: F05-8910-016
PAN: FMN0234SB

EPA Region 5 Records Ctr.



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1. INTRODUCTION

Ecology and Environment, Inc., Field Investigation Team (FIT) was tasked by the United States Environmental Protection Agency (U.S. EPA) to conduct a screening site inspection (SSI) of the National Steel Pellet Company (National Steel) site under contract number 68-01-7347.

The site was discovered through a Notification of Hazardous Waste Site form filed pursuant to section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) by M. J. Doyle of Hanna Mining Company (Hanna), of Hibbing, Minnesota, on June 17, 1981 (U.S. EPA 1981). According to the notification, leaded lubricating wastes are present in large piles of overburden scattered throughout the site. At the time of the filing, Hanna shared ownership of the site with National Steel (Krouse 1991a).

The site was evaluated in the form of a preliminary assessment (PA) that was submitted to U.S. EPA. The PA was prepared by Timothy Musick of the Minnesota Pollution Control Agency (MPCA) and is dated December 21, 1984 (U.S. EPA 1984).

FIT prepared an SSI work plan for the National Steel site under technical directive document (TDD) F05-8910-016, issued on November 12, 1989. The SSI work plan was approved by U.S. EPA on April 18, 1990. The SSI of the National Steel site was conducted on May 8, 1990, under amended TDD F05-8910-016, issued on April 18, 1990.

The FIT SSI included an interview with a site representative, a reconnaissance inspection of the site, and the collection of seven soil samples.

The purposes of an SSI have been stated by U.S. EPA in a directive outlining Pre-Remedial Program strategies. The directive states:

All sites will receive a screening SI to 1) collect additional data beyond the PA to enable a more refined preliminary HRS [Hazard Ranking System] score, 2) establish priorities among sites most likely to qualify for the NPL [National Priorities List], and 3) identify the most critical data requirements for the listing SI step. A screening SI will not have rigorous data quality objectives (DQOs). Based on the refined preliminary HRS score and other technical judgement factors, the site will then either be designated as NFRAP [no further remedial action planned], or carried forward as an NPL listing candidate. A listing SI will not automatically be done on these sites, however. First, they will go through a management evaluation to determine whether they can be addressed by another authority such as RCRA [Resource Conservation and Recovery Act].... Sites that are designated NFRAP or deferred to other statutes are not candidates for a listing SI.

The listing SI will address all the data requirements of the revised HRS using field screening and NPL level DQOs. It may also provide needed data in a format to support remedial investigation work plan development. Only sites that appear to score high enough for listing and that have not been deferred to another authority will receive a listing SI. (U.S. EPA 1988)

U.S. EPA Region V has also instructed FIT to identify sites during the SSI that may require removal action to remediate an immediate human health or environmental threat.

2. SITE BACKGROUND

2.1 INTRODUCTION

This section presents information obtained from SSI work plan preparation, the site representative interview, and the reconnaissance inspection of the site.

2.2 SITE DESCRIPTION

The National Steel site is located in the Mesabi Iron Range of Minnesota, north of Keewatin, Minnesota. The site consists of two separate areas of land that are part of an active mining operation that mines and processes taconite (a low-grade iron ore) for use in the steel industry. Because mining areas typically have no definite boundaries, the site representative stated that he could not provide an estimate of the total acreage occupied by the mining operation (Krouse 1990). Based on a United States Geological Survey (USGS) topographic map of the area, the mining operation appears to occupy more than 20 square miles (USGS 1952a).

According to a Notification of Hazardous Waste Site form filed for Hanna in 1981, leaded lubricating wastes were disposed of within overburden piles located in the area of the mining operation. Overburden is surficial material usually consisting of glacial sands and gravels. The overburden is excavated to expose underlying taconite deposits for open pit mining. Typically, each overburden pile covers some tens of acres (U.S. EPA 1981).

Based on the information provided in the notification and by the site representative, FIT determined the site to consist of two areas

where the leaded lubricating wastes were allegedly disposed of, N1/2 sec. 14, T.57N., R.22W., Itasca County, hereinafter referred to as the west area of the site; and parts of sections 7, 8, 17, 18, and 19, T.57N., R.21W., St. Louis County, hereinafter referred to as the east area of the site (Krouse 1990). The manufacturing facility, where National Steel processes taconite into pellets, is located in section 19, T.57N., R.21W., in the east area of the site. The east and west areas of the site together occupy several square miles.

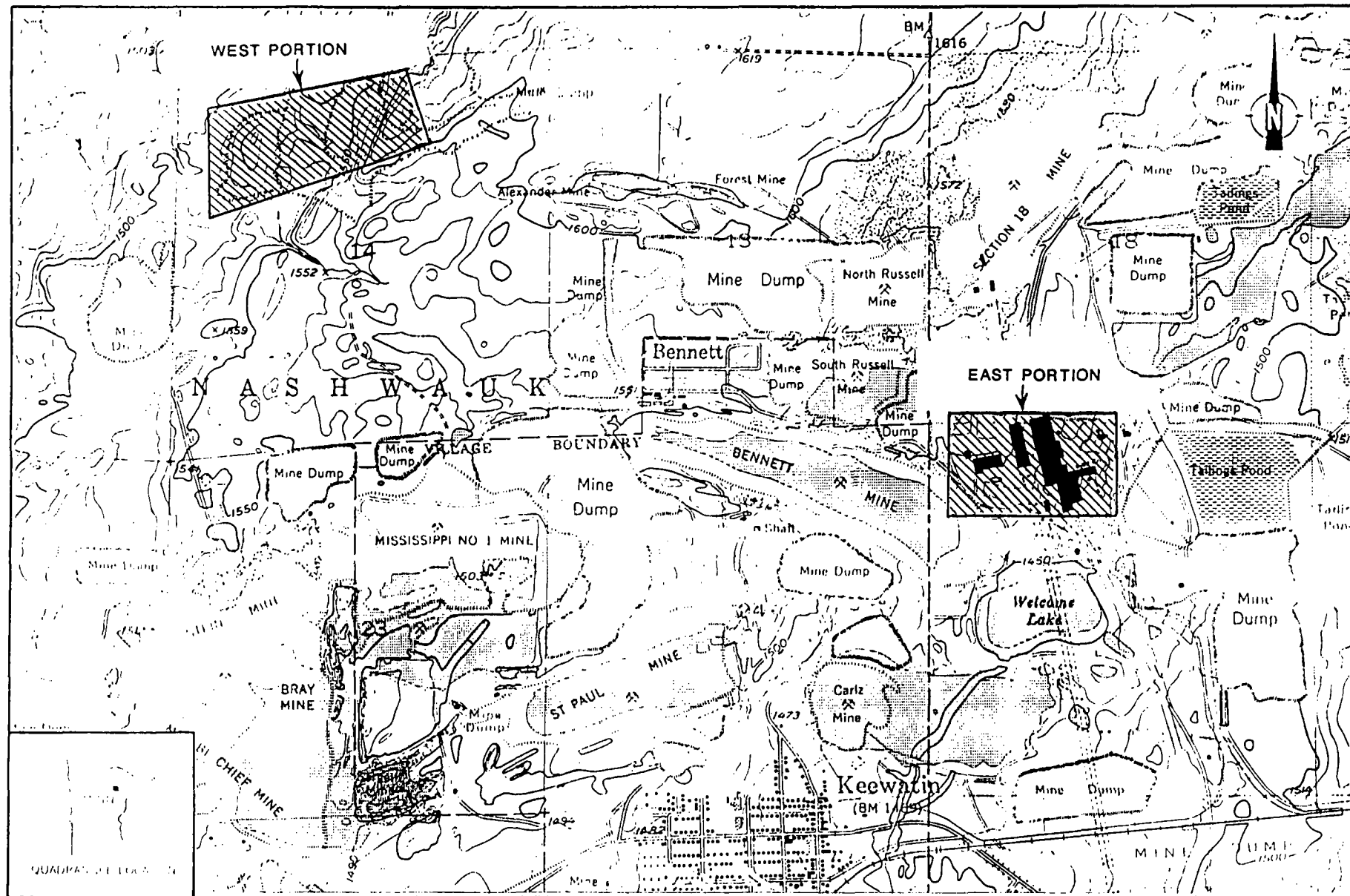
Because of the enormous size of the east and west areas of the site, FIT was unable to completely traverse it. FIT believed that concentrating its efforts on a portion of the west area, specifically, NW1/4 sec. 14, T.57N., R.22W., approximately 100 acres in size; and a portion of the east area, specifically, NW1/4 sec. 19, T.57N. R.21W., approximately 75 acres in size (hereinafter referred to as the west and east portions of the site), a reasonable attempt at overall site characterization could be made (see Figure 2-1 for the location of the east and west portions of the site).

A 4-mile radius map of the NSP site is provided in Appendix A.

2.3 SITE HISTORY

The site is currently owned and operated by National Steel, of Keewatin, Minnesota. Site ownership and use prior to 1967 are not known. Sometime in 1967 Hanna and National Steel purchased the site and co-owned the site until 1982. On January 1, 1982, National Steel purchased Hanna's interest in the site, although Hanna continued to manage the site until 1988. At that time National Steel assumed complete control of the site (Krouse 1991a).

FIT file information indicates that prior to 1980 gear lubricants containing 1 to 2% lead were routinely used to lubricate the gears on heavy-duty mining equipment (U.S. EPA 1984). It had been standard practice to collect spent lubricant in open-top half barrels or closed-top barrels prior to disposal in overburden piles. The overburden piles are created during mining of the taconite ore, which is overlain by the overburden. The overburden is excavated, hauled to areas that are not underlain by the iron formation, and dumped on the ground. Because the lubricant waste was deposited directly onto the piles as the overburden



SOURCE: USGS, Keewatin, MN Quadrangle, 7.5 Minute Series, 1952, Photorevised 1969 AND 1976.

FIGURE 2-1 LOCATION OF EAST AND WEST PORTIONS OF THE SITE

was being piled, it is distributed in a random fashion within the piles. The overburden piles consist of vast amounts of overburden; therefore, the waste lubricants may have been covered with as much as 100 feet of material. No records were kept of the quantities of leaded waste disposed of in this manner. However, the Notification of Hazardous Waste Site form filed for the site in June 1981 listed 70,000 gallons of waste lubricant handled from 1967 to 1980 (U.S. EPA 1981).

After 1980 National Steel began using unleaded lubricant. However, leaded lubricant was still being used for the most sensitive gears and bearings. After 1983 National Steel ceased using leaded lubricant. After 1980 and through 1983, the leaded lubricant waste was collected and stored in drums in the east area of the site. Every few months full drums were shipped out of state for incineration at Ross Incineration, at an unknown location in Ohio. Leaded lubricant waste was last shipped for incineration in 1985 (MPCA 1985) (Krouse 1991b). FIT file information does not indicate the reason for the two-year lag time between the last usage of leaded lubricants on-site and the final shipping date for incineration.

Since 1983, National Steel has used lubricant that is defined as nonhazardous material. The lubricant waste is recycled off-site by Oil Services Environmental, in Eveleth, Minnesota (Krouse 1991b).

National Steel has two National Pollution Discharge Elimination System (NPDES) permits for two separate outfalls at the site. Permit number MN0031879 expired July 31, 1989. National Steel had reapplied for its continuance in January 1989. The second permit (number MN0055948) expired March 31, 1990. National Steel had reapplied for this permit in January 1990. National Steel is currently operating on extensions to these permits. Permit number MN0031879 allows National Steel to dewater a pit located approximately 1 mile north of the manufacturing facility, enabling mining operations to continue when water accumulates in the pit. This same permit allows National Steel to discharge from a sewage treatment facility that collects wastewater generated from the manufacturing facility. An outfall from these areas empties into Welcome Creek, which is located approximately 1/3 mile south of the east area.

Permit number MN0055948 allows National Steel to use excess water that accumulates seasonally in tailings ponds located approximately 6 miles south of the east portion of the site. The water is pumped from the ponds to the manufacturing facility for reuse (Hall 1991; Krouse 1990, 1991, 1991a, 1991b).

National Steel also had a state air permit (number 62B840TI), which expired on April 30, 1989. A renewal application for the permit was submitted in September 1988 (Krouse 1990). The air permit allows for dust collectors on crushers, grinding mills, and conveyors (Krouse 1991b).

Chromium is used at the National Steel manufacturing facility to check the grade, or quality, of the iron ore. Chromium waste is accumulated at the rate of one drum per year and is stored in the east area. This waste is currently shipped to Aqua-Tech, Inc., located in Port Washington, Wisconsin. National Steel also generates solvent and paint waste as a result of routine maintenance of vehicles and on-site buildings. In 1989, National Steel generated approximately 5,700 gallons of solvent and paint waste. Safety Kleen of Cloquet, Minnesota, picks up and disposes of the solvent and paint waste approximately twice per month (Krouse 1990, 1991b).

Additionally, National Steel submits a yearly hazardous waste report to MPCA in addition to having annual inspections by MPCA. At the time of the FIT inspection, February 1990 was cited as the date of the most recent MPCA visit (Krouse 1990).

Currently, approximately 600 persons working in three shifts are employed at the National Steel facility. The facility operates 24 hours per day, 365 days per year. Twenty-four hour security is in effect in the east area (Krouse 1990).

According to the site representative, there are two wells that are used by National Steel employees for drinking water located in the east area of the site. One of the wells is located approximately 1/4 mile north of the National Steel facility, in a pit excavated to extract taconite ore. The water level of the well is only 10 feet below the surface of the pit. The other well is located approximately 500 feet south of the facility and is drilled to approximately 400 feet below the surface (Krouse 1991).

Currently, there are no known regulatory or litigation activities occurring at the National Steel site (Krouse 1990).

3. SCREENING SITE INSPECTION PROCEDURES AND FIELD OBSERVATIONS

3.1 INTRODUCTION

This section outlines procedures and observations of the SSI of the National Steel site. Individual subsections address the site representative interview, reconnaissance inspection, and sampling procedures. Rationales for specific FIT activities are also provided. The SSI was conducted in accordance with the U.S. EPA-approved work plan with the following exceptions. Seven soil samples were collected instead of the five soil samples and three sediment samples proposed in the work plan. FIT determined that because of the nature of the waste at the site, the additional soil samples would better characterize the site. FIT also did not observe any overland migration routes to surface water from either the west or east areas; consequently, no sediment samples were collected.

The U.S. EPA Potential Hazardous Waste Site Inspection Report (Form 2070-13) for the National Steel site is provided in Appendix B.

3.2 SITE REPRESENTATIVE INTERVIEW

Deneen Benford, FIT team leader, conducted an interview with George Krouse, Environmental Engineer for National Steel. The interview took place on May 8, 1990, at approximately 8:30 a.m. in Krouse's office, located in National Steel's office/manufacturing facility. Timothy Mayers, FIT team member, was also present during the interview. The interview was conducted to gather information that would aid FIT in conducting SSI activities.

3.3 RECONNAISSANCE INSPECTION

Following the site representative interview, FIT conducted a reconnaissance inspection of the east and west portions of the site and surrounding area in accordance with Ecology and Environment, Inc. (E & E), health and safety guidelines. The reconnaissance inspection began at 10:39 a.m. and included a walk-through of the west and east portions of the site to determine appropriate health and safety requirements for conducting on-site activities and to make observations to aid in characterizing the site. FIT also determined sampling locations during the reconnaissance inspection. FIT was accompanied by the site representative during the reconnaissance inspection.

Reconnaissance Inspection Observations. The east portion of the site is a rectangular parcel of land that contains the manufacturing facility and an office building (see Figure 3-1 for features of the east portion of the site). The perimeter of the east portion is unfenced, except for along the southern boundary, where the main entrance is located. A guardhouse and gate were observed at the main entrance.

The manufacturing facility, where taconite is processed into pellets, consists of two buildings located in the central section of the east portion. Rock crushers, magnetic separators, and various types of mixers are contained in these buildings. A fenced electrical substation is located just south of the westernmost manufacturing building.

The remainder of the east portion is mostly gravel covered and appears to have been used for mining activities, although some vegetation was observed.

Welcome Lake is located approximately 1,000 feet south of the manufacturing facility. The city of Keewatin, Minnesota, is located approximately 1 mile southwest of the manufacturing facility. Approximately 1 mile north of the manufacturing facility is an extensive pit (covering several square miles) where taconite is mined (Krouse 1991b).

The west portion of the site is characterized by several overburden piles, each approximately 10 acres in size (see Figure 3-2 for features of the west portion of the site). A gravel access road traverses this portion from east to southwest, ending in a loop. Most of the overburden piles are just north of the access road. From southwest to northeast, the piles become successively higher than the previous pile

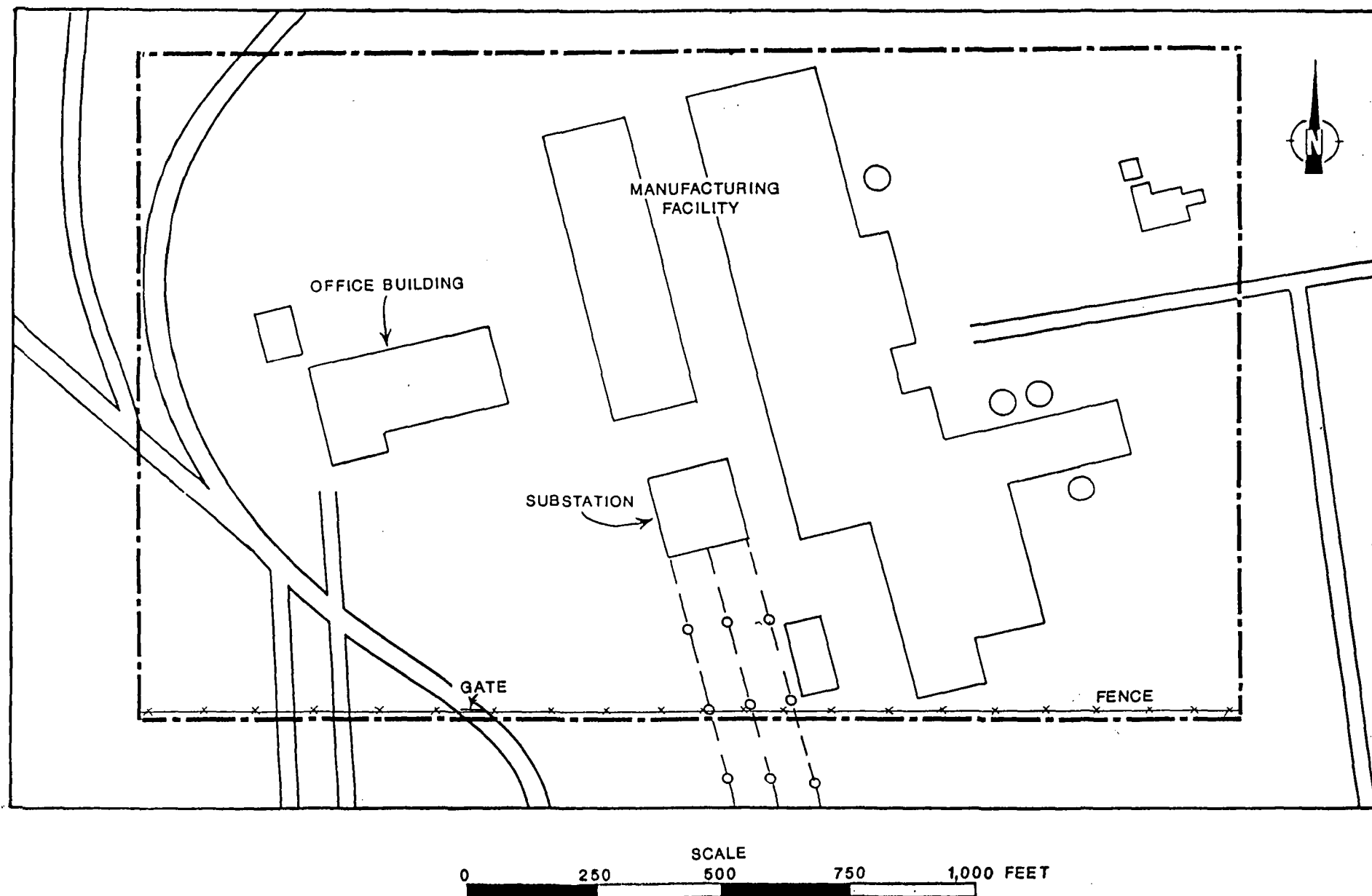


FIGURE 3-1 SITE FEATURES--EAST PORTION

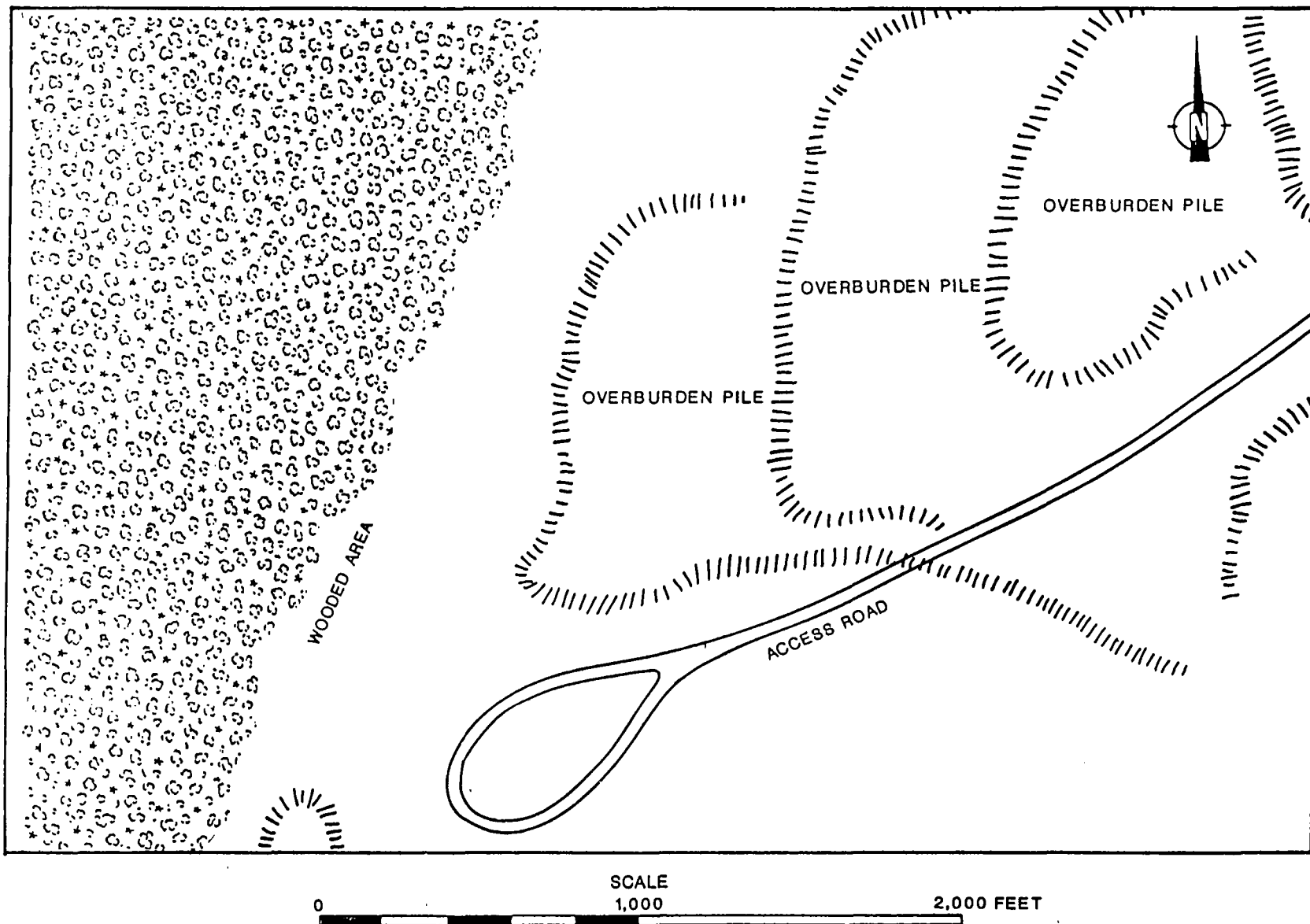


FIGURE 3-2 SITE FEATURES--WEST PORTION

by approximately 70 feet. The height of the lowest pile is 75 feet. Near one of the piles FIT observed several empty 5-gallon cans in various conditions (rusted, crushed, etc.), one of which was intact and labeled "Whitmore's Pressure-Proof Lubricants."

The west portion is unfenced, and accessible from all sides. During the SSI, FIT observed possible evidence of hunting (i.e., shotgun shells) in this area. Extensive wooded areas are located north and west of the overburden piles. The areas south and east of the west portion have been heavily disturbed by past and present mining activities.

FIT photographs from the SSI of the National Steel site are provided in Appendix C.

3.4 SAMPLING PROCEDURES

Samples were collected by FIT at locations selected during the reconnaissance inspection to determine whether U.S. EPA Target Compound List (TCL) compounds or Target Analyte List (TAL) analytes were present at the site. The TCL and TAL are included with corresponding quantitation/detection limits in Appendix D.

On May 8, 1990, FIT collected seven soil samples, including one potential background soil sample. Portions of samples collected by FIT were shared with the site representative.

Soil Sampling Procedures. Soil sample S1 was collected in the east portion of the site, within the fenced electrical substation adjacent to the manufacturing facility (see Figure 3-3 for soil sampling location in the east portion). Soil sample S1 was collected at a depth of 0 to 6 inches to determine whether any leakage from transformers within the electrical substation had occurred.

Soil samples S2 through S6 were collected in the west portion of the site, specifically on and around the overburden pile located nearest the loop in the access road. The site representative indicated that leaded lubricant waste was most likely disposed of in this area (see Figure 3-4 for soil sampling locations in the west portion). Surface soil sample S2 was collected at the west central edge of the overburden pile. Surface soil sample S2 was collected at a depth of 0 to 6 inches to determine whether any of the leaded lubricant waste allegedly disposed of within the overburden piles had leached out via percolation of

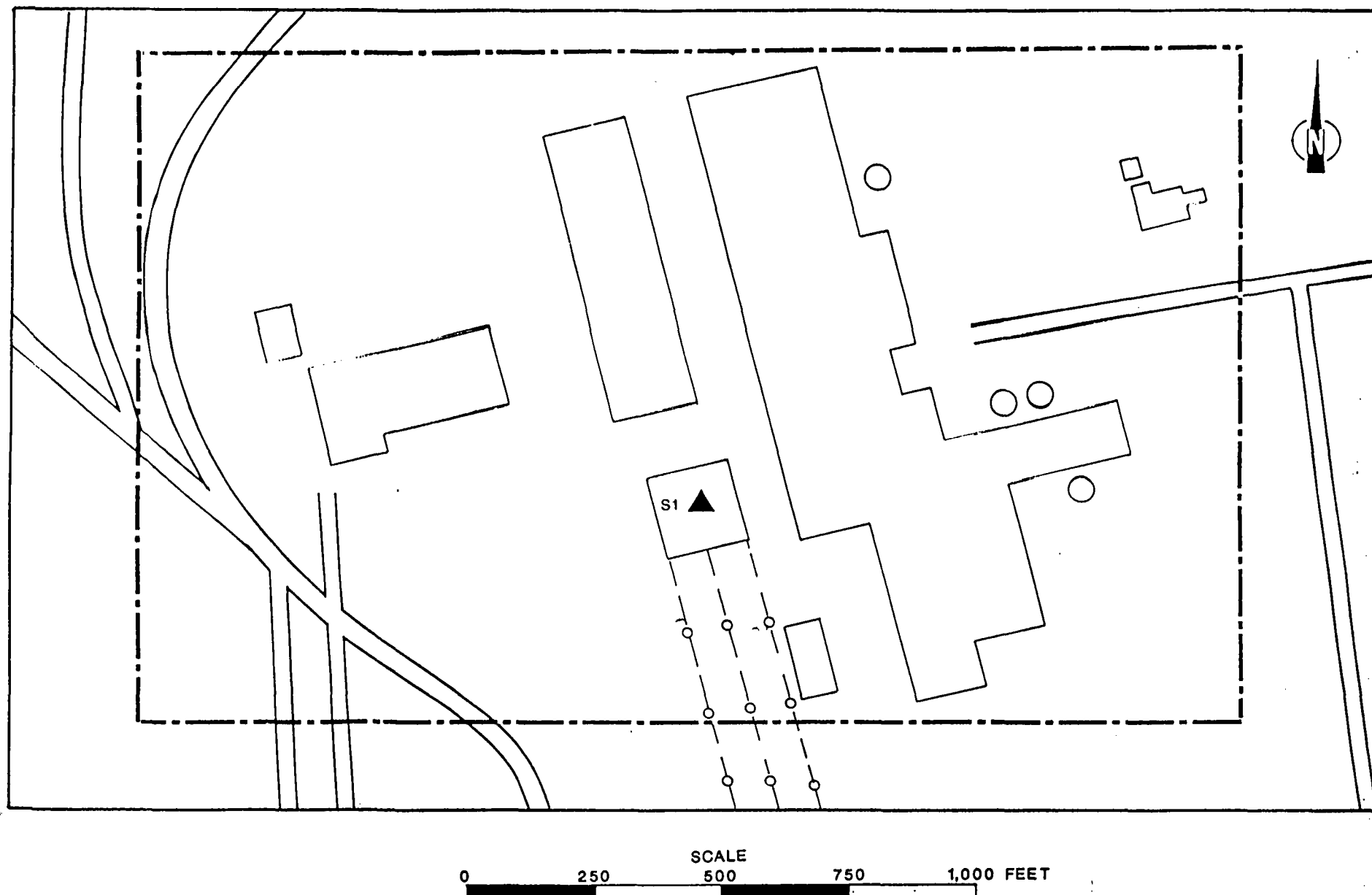


FIGURE 3-3 SOIL SAMPLING LOCATION--EAST PORTION

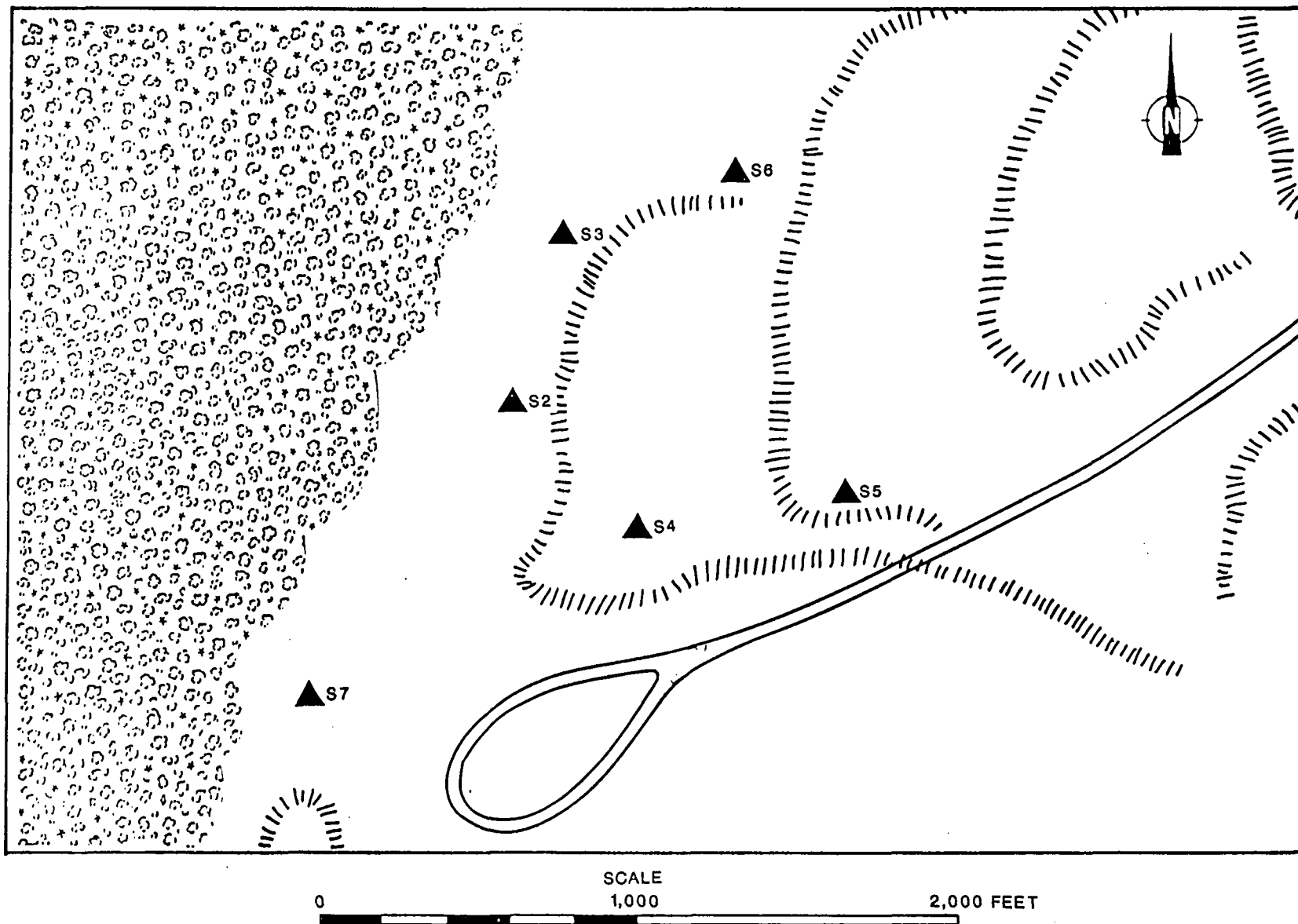


FIGURE 3-4 SOIL SAMPLING LOCATIONS--WEST PORTION

natural precipitation. Surface soil sample S3 was also collected at a depth of 0 to 6 inches. Sample S3 was collected at the northwestern edge of the base of the overburden pile to determine whether TCL compounds or TAL analytes had migrated away from the piles. Surface soil sample S4 was collected on the top of the overburden pile adjacent to the intact 5-gallon can labeled "Whitmore's Pressure-Proof Lubricants." Sample S4 was collected at a depth of 0 to 6 inches to determine whether TCL compounds and TAL analytes were present in the surrounding soil. Soil sample S5 was collected approximately 300 yards east-northeast of sample S4 from a different overburden pile, adjacent to a crushed and rusted chunk of metal that appeared to have been a 5-gallon can. No markings or labels were evident on the can. Surface soil sample S5 was collected at a depth of 0 to 6 inches in an area devoid of vegetative cover to determine whether TCL compounds or TAL analytes were present in this area. Surface soil sample S6 was collected in a low-lying area on the northern edge of the overburden pile nearest the loop in the access road to determine the areal extent of the potential migration of leaded lubricant waste in this area. Sample S6 was collected at a depth of 3 inches.

Surface soil sample S7 was collected as a potential background sample to determine soil constituents indigenous to the area of the site. Sample S7 was collected at a depth of 3 inches from a location approximately 300 yards west of the overburden pile nearest the loop in the access road, at the edge of a wooded area that appeared undisturbed.

All soil samples were grab samples and were collected in accordance with E & E standard soil sampling procedures (E & E 1987). All soil samples were collected using hand trowels. Sample material to be analyzed for volatile organic compounds was collected first and was transferred directly into sample bottles. The remaining sample material was transferred to stainless steel bowls, mixed, and then transferred to sample bottles (E & E 1987).

Standard E & E decontamination procedures were adhered to during the collection of all soil samples. The procedures included the scrubbing of all equipment (e.g., trowels and stainless steel bowls) with a solution of detergent (Alconox) and distilled water, and triple-rinsing the equipment with distilled water before the collection of each

sample (E & E 1987). All soil samples were packaged and shipped in accordance with U.S. EPA-required procedures.

As directed by U.S. EPA, all soil samples were analyzed using the U.S. EPA Contract Laboratory Program (CLP).

4. ANALYTICAL RESULTS

This section presents results of the chemical analysis of soil samples collected by FIT during the SSI of the National Steel site for TCL compounds and TAL analytes. All samples were analyzed for volatile organics, semivolatile organics, pesticides/polychlorinated biphenyls (PCBs), metals, and cyanide. Complete chemical analysis results of FIT-collected soil samples are provided Table 4-1.

Quantitation/detection limits used in the analysis of FIT-collected samples are provided in Appendix D.

The analytical data from the chemical analysis of FIT-collected samples for this SSI have been reviewed under the direction of U.S. EPA for validity; the review has been approved by U.S. EPA. The analytical data have also been reviewed by FIT for usability. Any additions, deletions, or changes resulting from review of the data have been incorporated in the chemical analysis results table presented in this section.

Table 4-1
RESULTS OF CHEMICAL ANALYSIS OF
FIT-COLLECTED SOIL SAMPLES FOR THE NATIONAL STEEL SITE SSI

Sample Collection Information and Parameters	<u>Sample Number</u>						
	S1	S2	S3	S4	S5	S6	S7
Date	5/8/90	5/8/90	5/8/90	5/8/90	5/8/90	5/8/90	5/8/90
Time	1415	1410	1430	1300	1330	1510	1520
CLP Organic Traffic Report Number	EKG13	EKG14	EKG15	EKG16	EKG17	EKG18	EKG19
CLP Inorganic Traffic Report Number	MEJY12	MEJY13	MEJY14	MEJY15	MEJY16	MEJY17	MEJY18
<u>Compound Detected</u> (values in $\mu\text{g/kg}$)							
<u>Volatile Organics</u>							
carbon disulfide	--	--	2J	--	2J	--	1J
<u>Semivolatile Organics</u>							
benzoic acid	--	--	--	--	--	--	1,100J
butylbenzylphthalate	300J	--	--	--	--	--	--
<u>Analyte Detected</u> (values in mg/kg)							
aluminum	1,960	8,040	4,440	6,220	4,400	4,890	14,500
arsenic	15.3JN	4.4JN	6.3JN	7.6JN	10.3JN	2.1JN	1.2JNB
barium	49.2	53.5	155	60.1	36.1B	28.1B	31.6B
beryllium	0.23B	--	--	--	--	--	--
cadmium	11.2JN	4.2JN	7.3JN	7.7JN	7.1JN	1.6JN	0.46JNB
calcium	5,720	1,220B	3,940	1,300	2,140	1,530	1,520
chromium	18.1	11.9	12.7	15.6	63.1	15.6	27.9
cobalt	3.7B	6.8B	--	7.6B	10.9	3.5B	4.2B
copper	80.9JE	12.5JE	8.6JE	13.6JE	17.4JE	7.5JE	8.5JE
iron	176,000	66,200	121,000	130,000	112,000	25,400	13,600
lead	16.7	8.6	2.6	9.3	33.7	2.1	4.0
magnesium	4,410	1,170B	1,510	1,890	2,190	1,790	3,440
manganese	6,520J*	1,940J*	1,320J*	4,350J*	16,800J*	527J*	137J*

Table 4-1 (Cont.)

Sample Collection Information and Parameters	<u>Sample Number</u>						
	S1	S2	S3	S4	S5	S6	S7
mercury	--	--	3.0	--	--	--	--
nickel	3.5B	--	3.8B	6.4B	5.7B	7.2	15.7
potassium	272B	573B	540B	421B	663B	537B	358B
silver	--	--	--	--	2.6	--	--
thallium	--	--	--	0.22B	--	--	--
vanadium	20.8	31.4	28.7	52.9	20.5	20.1	31.3
zinc	158	28.6	22.6	26.3	116	16.8	28.8

-- Not detected.

Table 4-1 (Cont.)

COMPOUND QUALIFIER	DEFINITION	INTERPRETATION
J	Indicates an estimated value.	Compound value may be semiquantitative.

ANALYTE QUALIFIERS	DEFINITION	INTERPRETATION
E	Estimated or not reported due to interference. See laboratory narrative.	Analyte or element was not detected, or value may be semiquantitative.
N	Spike recoveries outside QC protocols, which indicates a possible matrix problem. Data may be biased high or low. See spike results and laboratory narrative.	Value may be quantitative or semi-quantitative.
*	Duplicate value outside QC protocols which indicates a possible matrix problem.	Value may be quantitative or semi-quantitative.
B	Value is real, but is above instrument DL and below CRDL.	Value may be quantitative or semi-quantitative.
J	Value is above CRDL and is an estimated value because of a QC protocol.	Value may be semiquantitative.

5. DISCUSSION OF MIGRATION PATHWAYS

5.1 INTRODUCTION

This section presents discussions of data and information pertaining to potential migration pathways and targets of TCL compounds and TAL analytes that are possibly attributable to the National Steel site.

The five migration pathways of concern discussed are groundwater, surface water, air, fire and explosion, and direct contact.

5.2 GROUNDWATER

In accordance with the U.S. EPA-approved work plan, groundwater samples were not collected during the SSI of the National Steel site. Two TCL compounds were detected in FIT-collected soil samples; however, one of the detected compounds is a common laboratory artifact, and the other was detected at a concentration similar to background. TAL analytes were detected in FIT-collected on-site soil samples, including cadmium (11.2JN mg/kg in S1), mercury (3.0 mg/kg in S3), arsenic (15.3JN mg/kg in S1), and lead (33.7 mg/kg in S5) (see Table 4-1 for definitions and interpretations of qualifiers).

These TAL analytes may be attributable to the site based on the following information.

- o The TAL analytes were detected at concentrations above those of the background soil sample.
- o Leaded lubricating wastes with a tar-like consistency were deposited within overburden piles on-site (U.S. EPA 1981).

A potential exists for TAL analytes to migrate to groundwater in the vicinity of the site, based upon the following information.

- Leaded lubricating wastes with a tar-like consistency were deposited within overburden piles in the area of the site (U.S. EPA 1981).
- No liners exist beneath the site to prevent migration to groundwater (Krouse 1990).
- The exact locations of wastes that were deposited within overburden piles are not known. Consequently, the wastes may not have been detected in FIT sampling.

The potential for TAL analytes to migrate from the site to groundwater is also affected by the geology of the area of the site. The site is underlain by Quaternary-age glacial deposits consisting of clay, sand, stones, and boulders, to an approximate depth of 115 feet. Underlying these glacial deposits is a layer of slate that averages 7 feet in thickness. Beneath this layer of slate is a deep deposit of taconite, which is a sedimentary rock containing 25 to 30% iron (Ojakangas and Matsch 1982). The taconite ranges in texture from very hard to soft or decomposed, and averages 225 feet in thickness. Underlying the layer of taconite is approximately 17 feet of sandstone followed by porous disseminated cherry taconite with interbedded layers of hard chert and sand with an average thickness of 100 feet (Olson 1987).

Well logs of the area of the site do not indicate the presence of a confining layer between the glacial deposits and the taconite formation. While near-surface deposits of the taconite formation are hydraulically connected to the glacial deposits, it is not known whether there is a hydraulic connection to deeper water-bearing taconite (Palen 1991). Therefore, the aquifer of concern (AOC) is assumed to be both the shallow (glacial sand and gravel) and deep (taconite) aquifers.

Because the mining activities have altered landforms in the area of the site, the direction of groundwater flow is unknown (Palen 1991). Within a 3-mile radius of the site, the nearest well used for drinking

purposes is located in the east area, approximately 500 feet south of the manufacturing facility. This well is used by National Steel employees for drinking water (Krouse 1991) (see Appendix E for well logs of the area of the site).

According to Gerald Olson, Superintendent, Keewatin Public Works, the town of Keewatin operates two municipal wells within a 3-mile radius of the site that draw from the sandstone layer and porous disseminated taconite formation. Municipal well number 1 is located in the center of town, approximately 1 1/2 miles southeast of the west portion. This well is cased to 219 feet of its 606-foot depth. Municipal well number 2 is located on Keewatin's north side, approximately 1 mile southwest of the west portion, and is cased to a depth of 374 feet. Approximately 1,700 persons obtain their drinking water from the Keewatin municipal water supply (Olson 1987).

Approximately 153 persons use private wells within a 3-mile radius of the site. These private wells area screened in the AOC at depths of approximately 54 to 71 feet (Olson 1987). The population figure was calculated by counting houses that are outside of Keewatin's municipal water distribution boundaries, but within a 3-mile radius of the site, on USGS topographic maps of the area of the site (USGS 1952, 1952a, 1952b, 1957). The total number of houses was then multiplied by a persons-per-household average of 2.84 for Itasca County, Minnesota (U.S. Bureau of the Census 1982).

The total potential target population, 2,453 persons, includes the 1,700 persons who obtain water from the Keewatin municipal water supply and the 153 persons utilizing private wells within a 3-mile radius of the site. In addition, National Steel has two wells that are used for drinking purposes by its employees. Both wells are located within 1/4 mile of the east portion. A total of 600 persons are employed by National Steel (Krouse 1990, 1991).

5.3 SURFACE WATER

In accordance with the U.S. EPA-approved work plan, surface water samples were not collected during the SSI of the National Steel site. There appears to be no potential for surface water in the vicinity of

the site to be affected by the migration of the TAL analytes detected in on-site soil samples, based on the following information.

- FIT did not observe an overland migration route to surface water from the sampling locations at either site area. The St. Paul Mine pit, the nearest surface water body to the west portion, is located approximately 1 1/2 miles south-east of the west portion. Welcome Lake, the surface water body nearest to the east portion, is approximately 1/5 mile south of the east portion of the site.
- Although two NPDES outfalls are permitted for the NSP site, there appears to be no potential for migration to these outfalls. Distances from the sampling locations to the outfalls and the physical nature of the wastes themselves would prohibit migration along this pathway.

Additionally, the St. Paul Mine pit and Welcome Lake are not currently used for drinking purposes; however, they are both used for recreation (Bonneville 1988; Grahee 1990).

5.4 AIR

A release of TCL compounds or TAL analytes to the air was not documented during the SSI of the NSP site. During the reconnaissance inspection, FIT site-entry instruments (OVA 128, hydrogen cyanide monitor, and explosimeter) did not detect levels above background concentrations at the site. In accordance with the U.S. EPA-approved work plan, further air monitoring was not conducted by FIT.

A potential does not exist for TCL compounds and TAL analytes to migrate from the site via windblown particulates. This potential is based on the following information.

- The site, especially the west portion, is completely surrounded by dense vegetation and wooded areas.

6. REFERENCES

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_____, May 29, 1991a, Environmental Engineer, National Steel, Keewatin, Minnesota, telephone conversation, contacted by David Szaflarski of E & E.

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_____, December 21, 1984, Potential Hazardous Waste Site Preliminary Assessment and Executive Summary for the NSP Site, U.S. EPA ID: MND071344733, prepared by Tim Musick, MPCA, Duluth, Minnesota.

_____, February 12, 1988, Office of Solid Waste and Emergency Response, Pre-Remedial Strategy for Implementing SARA, Directive number 9345.2-01, Washington, D.C.

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7120:8

APPENDIX A

SITE 4-MILE RADIUS MAP

SDMS US EPA Region V

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APPENDIX B

U.S. EPA FORM 2070-13



Site Inspection Report



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION

01 STATE MN 02 SITE NUMBER DO71344733

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site) NATIONAL STEEL PELLET COMPANY
02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER R. 21 & 22 W 3/4 mi NE (AS IT APPEARS) P.O. ON CERCLIS Box 217
03 CITY KEEWATIN
04 STATE MN. 05 ZIP CODE 55753 06 COUNTY ST. LOUIS/ITASCA 07 COUNTY CODE 061 08 CONG DIST 08
09 COORDINATES
LATITUDE 47° 23' 35" N LONGITUDE 93° 02' 08" W
10 TYPE OF OWNERSHIP (Check one)
☒ A. PRIVATE ☐ B. FEDERAL ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL ☐ F. OTHER ☐ G. UNKNOWN

III. INSPECTION INFORMATION

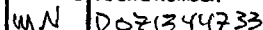
01 DATE OF INSPECTION 5/8/90
MONTH DAY YEAR
02 SITE STATUS
☒ ACTIVE ☐ INACTIVE
03 YEARS OF OPERATION
~1967 PRESENT UNKNOWN
BEGINNING YEAR ENDING YEAR
04 AGENCY PERFORMING INSPECTION (Check all that apply)
☐ A. EPA ☒ B. EPA CONTRACTOR Ecology & Environment, Inc. ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR
(Name of firm) (Name of firm)
☐ E. STATE ☐ F. STATE CONTRACTOR ☐ G. OTHER

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
<u>DEELEN BENFORD</u>	<u>BIOLOGIST</u>	<u>Ecology & Environment, Inc.</u>	<u>(312) 663-9415</u>
09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
<u>TIM MAYERS</u>	<u>GEOGRAPHER</u>	<u>Ecology & Environment, Inc.</u>	<u>(312) 663-9415</u>
<u>REGINA BAYER</u>	<u>WATER CHEMIST</u>	<u>Ecology & Environment, Inc.</u>	<u>(312) 663-9415</u>
<u>STANLEY SEUER</u>	<u>WATER RESOURCE MANAGER</u>	<u>Ecology & Environment, Inc.</u>	<u>(312) 663-9415</u>
<u>JEFF TAYLOR</u>	<u>BIOLOGIST</u>	<u>Ecology & Environment, Inc.</u>	<u>(312) 663-9415</u>
<u>JEFF DICKSON</u>	<u>GEOLOGIST</u>	<u>Ecology & Environment, Inc.</u>	<u>(312) 663-9415</u>
13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO.
<u>GEORGE KROUSE</u>	<u>ENVIRONMENTAL ENGINEER</u>	<u>P.O. Box 217</u>	<u>(218) 778-6521</u>
		<u>KEEWATIN, MINN. 55753</u>	<u>()</u>
			<u>()</u>
			<u>()</u>
			<u>()</u>
			<u>()</u>
			<u>()</u>
			<u>()</u>

17 ACCESS GAINED BY (Check one)
☒ PERMISSION ☐ WARRANT
18 TIME OF INSPECTION 0830 - 1700
5/8/90
19 WEATHER CONDITIONS
PARTLY CLOUDY, VARIABLE WINDS, 257°F

IV. INFORMATION AVAILABLE FROM

01 CONTACT MR. Ron SWENSON/SUPERVISOR
02 OF (Agency/Organization) MINNESOTA Pollution Control Agency (MPCA)
03 TELEPHONE NO. (612) 297-1793
04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM TIM MAYERS
05 AGENCY U.S. EPA/FIT
06 ORGANIZATION Ecology & Environment, Inc.
07 TELEPHONE NO. 312/663-9415
08 DATE 05/24/91
MONTH DAY YEAR



Filed
on
June, 1988

EPA FORM 2070-13(7-67)



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
MN 007134733

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☒ A. GROUNDWATER CONTAMINATION 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ~2453 04 NARRATIVE DESCRIPTION

SEE Subsection 5.2 in NARRATIVE

01 ☐ B. SURFACE WATER CONTAMINATION 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 0 04 NARRATIVE DESCRIPTION

SEE Subsection 5.3 in NARRATIVE

01 ☐ C. CONTAMINATION OF AIR 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 0 04 NARRATIVE DESCRIPTION

SEE Subsection 5.4 in NARRATIVE

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 0 04 NARRATIVE DESCRIPTION

SEE Subsection 5.5 in NARRATIVE

01 ☒ E. DIRECT CONTACT 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ~15 04 NARRATIVE DESCRIPTION

SEE subsection 5.6 in NARRATIVE

01 ☒ F. CONTAMINATION OF SOIL 02 ☒ OBSERVED (DATE: 5/8/90) ☐ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: UNKNOWN 04 NARRATIVE DESCRIPTION
(Acres)

SEE Section 4 in NARRATIVE

01 ☒ G. DRINKING WATER CONTAMINATION 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ~2453 04 NARRATIVE DESCRIPTION

SEE Subsection 5.2 in NARRATIVE

01 ☒ H. WORKER EXPOSURE/INJURY 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: 600 04 NARRATIVE DESCRIPTION

SEE Subsections 2.3 and 3.3 in NARRATIVE

01 ☒ I. POPULATION EXPOSURE/INJURY 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ~2453 04 NARRATIVE DESCRIPTION

SEE Subsection 5.2 in NARRATIVE



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
MN 0071344733

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☒ J. DAMAGE TO FLORA
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☒ POTENTIAL

☐ ALLEGED

A light vegetative cover was observed in the west area by FIT.
A potential exists for damage to flora if the flora were to come
in contact with the lubricating waste that was deposited with the overburden.

01 ☒ K. DAMAGE TO FAUNA

04 NARRATIVE DESCRIPTION (include names of species)

02 ☐ OBSERVED (DATE: _____)

☒ POTENTIAL

☐ ALLEGED

A POTENTIAL EXISTS IF FAUNA WERE TO COME IN CONTACT WITH
WASTES. HOWEVER DURING THE SSI, DAMAGE TO FAUNA WAS
NOT REPORTED OR OBSERVED BY FIT.

01 ☒ L. CONTAMINATION OF FOOD CHAIN

04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☒ POTENTIAL

☐ ALLEGED

FIT OBSERVED EVIDENCE OF HUNTING ON-SITE. A POTENTIAL
EXISTS IF FAUNA COMES IN CONTACT WITH WASTES. HOWEVER, CONTAMINATION OF
FOOD CHAIN WAS NOT REPORTED OR OBSERVED BY FIT DURING THE SSI.

01 ☒ M. UNSTABLE CONTAINMENT OF WASTES

(Spills/Runoff/Standing liquids, Leaking drums)

03 POPULATION POTENTIALLY AFFECTED: ~ 2453

02 ☒ OBSERVED (DATE: 5/8/96)

☐ POTENTIAL

☐ ALLEGED

04 NARRATIVE DESCRIPTION

SEE section 4 in narrative

01 ☐ N. DAMAGE TO OFFSITE PROPERTY

04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

NONE REPORTED, OBSERVED DURING THE SSI, OR ANTICIPATED

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs

04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

NONE REPORTED, OBSERVED DURING THE SSI, OR ANTICIPATED

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING

04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

NONE

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

NONE

III. TOTAL POPULATION POTENTIALLY AFFECTED: ~ 2453

IV. COMMENTS

NONE

V. SOURCES OF INFORMATION (For specific references, e.g., state files, sample analysis reports)

FIT FILE information

FIT SSI conducted 5/8/90



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
MN D071344733

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
<input checked="" type="checkbox"/> A. NPDES	MN0031879	9-12-84	7/31/89	REAPPLIED FOR: JAN. 1989
<input type="checkbox"/> B. UIC	MN0055948	5-31-85	2/31/90	REAPPLIED FOR: JAN. 1990
<input type="checkbox"/> C. AIR				
<input type="checkbox"/> D. RCRA				
<input type="checkbox"/> E. RCRA INTERIM STATUS				
<input type="checkbox"/> F. SPCC PLAN				
<input checked="" type="checkbox"/> G. STATE (Specify) AIR	62B840TI		5/30/89	REAPPLIED FOR: SEPT. 1988
<input type="checkbox"/> H. LOCAL (Specify)				
<input type="checkbox"/> I. OTHER (Specify)				
<input type="checkbox"/> J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE	04 TREATMENT (Check all that apply)	05 OTHER
<input type="checkbox"/> A. SURFACE IMPOUNDMENT			<input type="checkbox"/> A. INCINERATION NA	<input checked="" type="checkbox"/> A. BUILDINGS ON SITE
<input checked="" type="checkbox"/> B. PILES	~1400	drum	<input type="checkbox"/> B. UNDERGROUND INJECTION	6
<input type="checkbox"/> C. DRUMS, ABOVE GROUND		equivalents	<input type="checkbox"/> C. CHEMICAL/PHYSICAL	
<input type="checkbox"/> D. TANK, ABOVE GROUND			<input type="checkbox"/> D. BIOLOGICAL	
<input type="checkbox"/> E. TANK, BELOW GROUND			<input type="checkbox"/> E. WASTE OIL PROCESSING	
<input type="checkbox"/> F. LANDFILL			<input type="checkbox"/> F. SOLVENT RECOVERY	
<input type="checkbox"/> G. LANDFARM			<input type="checkbox"/> G. OTHER RECYCLING/RECOVERY	
<input type="checkbox"/> H. OPEN DUMP			<input type="checkbox"/> H. OTHER (Specify)	06 AREA OF SITE
<input type="checkbox"/> I. OTHER (Specify)				~175 (Acres)

07 COMMENTS

Lubricating agents, containing lead, were dumped within large piles of tailings at the USP site. Amount listed in Part 4, III SITE DESCRIPTION was obtained from CERCLA 105(c) form filed in 1981.

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

☐ A. ADEQUATE, SECURE ☐ B. MODERATE ☒ C. INADEQUATE, POOR ☐ D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DRUMS, UNERS, BARRIERS, ETC.

FENCING DOES NOT EXIST IN THE AREA THAT WAS UTILIZED FOR DUMPING OF LEADED LUBRICANTS - DURING FIT'S SSI only 1 5-gallon can that formerly held lubricating GREASE WAS DISCOVERED. THERE ARE NO KNOWN ENGINEERED LINES BENEATH THE DUMP AREAS.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: ☒ YES ☐ NO

02 COMMENTS WEST AREA OF SITE, AS DISCUSSED IN NARRATIVE, IS POTENTIALLY ACCESSIBLE TO THE PUBLIC DUE TO LACK OF FENCING. EAST AREA OF SITE WHERE OFFICE AND MANUFACTURING COMPLEX IS LOCATED IS ACCESSIBLE ONLY TO AUTHORIZED PERSONNEL

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis reports)

FIT'S SSI conducted 5/8/90



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
MN 0671344733

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY
(Check as applicable)

SURFACE WELL
COMMUNITY A. ☐ B. ☒
NON-COMMUNITY C. ☐ D. ☒

02 STATUS

ENDANGERED AFFECTED MONITORED
A. ☐ B. ☐ C. ☒ ASSUMED
D. ☐ E. ☐ F. ☐

03 DISTANCE TO SITE

A. ~1 (mi)
B. ~500 ft (ft)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

☒ A. ONLY SOURCE FOR DRINKING ☐ B. DRINKING
(Other sources available)
COMMERCIAL, INDUSTRIAL, IRRIGATION
(No other water sources available)
☐ C. COMMERCIAL, INDUSTRIAL, IRRIGATION
(Limited other sources available)
☐ D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER ~2453

03 DISTANCE TO NEAREST DRINKING WATER WELL ~500 ft (ft)

04 DEPTH TO GROUNDWATER

54 (ft)

05 DIRECTION OF GROUNDWATER FLOW

UNKNOWN

06 DEPTH TO AQUIFER
OF CONCERN

54 (ft)

07 POTENTIAL YIELD
OF AQUIFER

UNKNOWN (gpd)

08 SOLE SOURCE AQUIFER

☐ YES ☒ NO

09 DESCRIPTION OF WELLS (including usage, depth, and location relative to population and buildings)

SEE subsection 5.2 in narrative and Appendix E

10 RECHARGE AREA

☒ YES
☐ NO

COMMENTS

ASSUMED DUE TO PERCOLATION
of natural precipitation

11 DISCHARGE AREA

☐ YES
☒ NO

COMMENTS

UNKNOWN

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

☒ A. RESERVOIR, RECREATION,
DRINKING WATER SOURCE ☐ B. IRRIGATION, ECONOMICALLY
IMPORTANT RESOURCES ☐ C. COMMERCIAL, INDUSTRIAL ☐ D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME:

NONE

AFFECTED

DISTANCE TO SITE

☐

☐

☐

(mi)

(mi)

(mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE

A. ~15
NO. OF PERSONS

TWO (2) MILES OF SITE

B. ~25
NO. OF PERSONS

THREE (3) MILES OF SITE

C. ~1653
NO. OF PERSONS

02 DISTANCE TO NEAREST POPULATION

ON-site (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE

~10

04 DISTANCE TO NEAREST OFF-SITE BUILDING

~1 (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., rural village, densely populated urban area)

SEE narrative section 2.2



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
MN 0071344733

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

☐ A. $10^{-6} - 10^{-8}$ cm/sec ☐ B. $10^{-4} - 10^{-6}$ cm/sec ☒ C. $10^{-4} - 10^{-3}$ cm/sec ☐ D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

☐ A. IMPERMEABLE (Less than 10^{-8} cm/sec) ☒ B. RELATIVELY IMPERMEABLE ($10^{-4} - 10^{-6}$ cm/sec) ☐ C. RELATIVELY PERMEABLE ($10^{-2} - 10^{-4}$ cm/sec) ☐ D. VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK

~ 115 (ft)

04 DEPTH OF CONTAMINATED SOIL ZONE

UNKNOWN (ft)

05 SOIL pH

UNKNOWN

06 NET PRECIPITATION

5 (in)

07 ONE YEAR 24 HOUR RAINFALL

2.2 (in)

08 SLOPE

SITE SLOPE
~ 3 %

DIRECTION OF SITE SLOPE

NW

TERRAIN AVERAGE SLOPE

~ 3 %

09 FLOOD POTENTIAL

SITE IS IN UNKNOWN YEAR FLOODPLAIN

10

NA
☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE

A. NA (mi)

OTHER

B. > 1 (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

potentially within 1/4 (mi)

ENDANGERED SPECIES: Gray wolf

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL

A. CA-2 USE (mi)

RESIDENTIAL AREAS, NATIONAL/STATE PARKS,
FORESTS, OR WILDLIFE RESERVES

B. ~ 1 1/2 (mi)

AGRICULTURAL LANDS
PRIME AG LAND AG LAND

C. UNKNOWN (mi) D. > 3 (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

SEE APPENDIX B

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

FIT FILE information
FIT SSI, conducted 5/8/70



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
MN 067344733

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER			
SURFACE WATER			
WASTE			
AIR			
RUNOFF			
SPILL			
SOIL - ORGANIC	7	S-CUBED 3398 CARMEL MOUNTAIN RD. P.O. BOX 1620, SAN DIEGO, CA 92121-1095	ON FILE
SOIL - INORGANIC	7	LAUCKS TESTING LABS, INC. 940 S. HARNEY ST., SEATTLE, WA 98108	ON FILE
OTHER			

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS
CNA 128	NO READINGS ABOVE BACKGROUND
HYDROGEN DRAGER TUBES CYANIDE	" "
O ₂ METER	NO DEVIATIONS FROM BACKGROUND
EXPLOSIOMETER	NO READINGS ABOVE BACKGROUND

IV. PHOTOGRAPHS AND MAPS

01 TYPE <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> AERIAL	02 IN CUSTODY OF Ecology & Environment, Inc. / Chicago <small>(Name of organization or individual)</small>
03 MAPS <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	04 LOCATION OF MAPS Ecology & Environment, Inc. / Chicago

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

RADIATION MONITOR

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

FIT SSI conducted 5/8/90



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
MN 007134733

II. CURRENT OWNER(S)

PARENT COMPANY (if applicable)

01 NAME National Steel Pellet Co.		02 D+B NUMBER		08 NAME NA		09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.) P.O. Box 217		04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD #, etc.)		11 SIC CODE	
05 CITY Keewauwin		06 STATE MN	07 ZIP CODE 55753	12 CITY		13 STATE	14 ZIP CODE
01 NAME N/A		02 D+B NUMBER		08 NAME N/A		09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD #, etc.)		11 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE	12 CITY		13 STATE	14 ZIP CODE
01 NAME N/A		02 D+B NUMBER		08 NAME N/A		09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD #, etc.)		11 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE	12 CITY		13 STATE	14 ZIP CODE
01 NAME N/A		02 D+B NUMBER		08 NAME N/A		09 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD #, etc.)		11 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE	12 CITY		13 STATE	14 ZIP CODE

III. PREVIOUS OWNER(S) (List most recent first)

IV. REALTY OWNER(S) (if applicable; list most recent first)

01 NAME Hanna Mining Co.		02 D+B NUMBER		01 NAME NA		02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.) unknown		04 SIC CODE		03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	
05 CITY Hibbing		06 STATE MN	07 ZIP CODE	05 CITY		06 STATE	07 ZIP CODE
01 NAME N/A		02 D+B NUMBER		01 NAME N/A		02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE	05 CITY		06 STATE	07 ZIP CODE
01 NAME N/A		02 D+B NUMBER		01 NAME N/A		02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE	05 CITY		06 STATE	07 ZIP CODE

V. SOURCES OF INFORMATION (List specific references, e.g., state files, sample analysis, reports)

ECI SSI conducted 5/8/70



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

L IDENTIFICATION

01 STATE 02 SITE NUMBER
MN 0071344733

II. CURRENT OPERATOR (Provide if different from owner)

OPERATOR'S PARENT COMPANY (if applicable)

01 NAME SAME AS CURRENT OWNER		02 D+B NUMBER		10 NAME N/A		11 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE	14 CITY		15 STATE	16 ZIP CODE
08 YEARS OF OPERATION 1967-PRESENT		09 NAME OF OWNER					

III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)

PREVIOUS OPERATORS' PARENT COMPANIES (if applicable)

01 NAME SAME AS PREVIOUS OWNER		02 D+B NUMBER		10 NAME N/A		11 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE	14 CITY		15 STATE	16 ZIP CODE
08 YEARS OF OPERATION 1967-1988		09 NAME OF OWNER DURING THIS PERIOD					

01 NAME N/A		02 D+B NUMBER		10 NAME N/A		11 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE	14 CITY		15 STATE	16 ZIP CODE
08 YEARS OF OPERATION		09 NAME OF OWNER DURING THIS PERIOD					

01 NAME N/A		02 D+B NUMBER		10 NAME N/A		11 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		04 SIC CODE		12 STREET ADDRESS (P.O. Box, RFD #, etc.)		13 SIC CODE	
05 CITY		06 STATE	07 ZIP CODE	14 CITY		15 STATE	16 ZIP CODE
08 YEARS OF OPERATION		09 NAME OF OWNER DURING THIS PERIOD					

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

FIT SSI, conducted 5/8/90



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
MN 071344733

II. ON-SITE GENERATOR

01 NAME National Steel Pellet Co.	02 D+B NUMBER		
03 STREET ADDRESS (P.O. Box, RFD #, etc.) P.O. Box 217	04 SIC CODE		
05 CITY KEEWAUW	06 STATE MN	07 ZIP CODE 55753	

III. OFF-SITE GENERATOR(S)

01 NAME NA	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE 07 ZIP CODE	05 CITY	06 STATE 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE 07 ZIP CODE	05 CITY	06 STATE 07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME ROSS INCINERATION	02 D+B NUMBER	01 NAME O.I Services ENVIRONMENTAL	02 D+B NUMBER		
03 STREET ADDRESS (P.O. Box, RFD #, etc.) unknown	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.) unknown	04 SIC CODE		
05 CITY unknown	06 STATE OH	07 ZIP CODE	05 CITY Eveleth	06 STATE MN	07 ZIP CODE
01 NAME Safety Kleen	02 D+B NUMBER	01 NAME Aqua-Tech, Inc.	02 D+B NUMBER		
03 STREET ADDRESS (P.O. Box, RFD #, etc.) unknown	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.) unknown	04 SIC CODE		
05 CITY CLOQUET	06 STATE MN	07 ZIP CODE	05 CITY Port Washington	06 STATE WI	07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

FIT SSI conducted 5/8/90



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
MA 0671344733

II. PAST RESPONSE ACTIVITIES

01 <input type="checkbox"/> A. WATER SUPPLY CLOSED 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
NA		
01 <input type="checkbox"/> B. TEMPORARY WATER SUPPLY PROVIDED 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
NA		
01 <input type="checkbox"/> C. PERMANENT WATER SUPPLY PROVIDED 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
NA		
01 <input type="checkbox"/> D. SPILLED MATERIAL REMOVED 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
NA		
01 <input type="checkbox"/> E. CONTAMINATED SOIL REMOVED 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
NA		
01 <input type="checkbox"/> F. WASTE REPACKAGED 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
NA		
01 <input type="checkbox"/> G. WASTE DISPOSED ELSEWHERE 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
NA		
01 <input type="checkbox"/> H. ON SITE BURIAL 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
NA		
01 <input type="checkbox"/> I. IN SITU CHEMICAL TREATMENT 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
NA		
01 <input type="checkbox"/> J. IN SITU BIOLOGICAL TREATMENT 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
NA		
01 <input type="checkbox"/> K. IN SITU PHYSICAL TREATMENT 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
NA		
01 <input type="checkbox"/> L. ENCAPSULATION 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
NA		
01 <input type="checkbox"/> M. EMERGENCY WASTE TREATMENT 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
NA		
01 <input type="checkbox"/> N. CUTOFF WALLS 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
NA		
01 <input type="checkbox"/> O. EMERGENCY DIKING SURFACE WATER DIVERSION 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
NA		
01 <input type="checkbox"/> P. CUTOFF TRENCHES/SUMP 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
NA		
01 <input type="checkbox"/> Q. SUBSURFACE CUTOFF WALL 04 DESCRIPTION	02 DATE _____	03 AGENCY _____
NA		



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

L IDENTIFICATION
01 STATE 02 SITE NUMBER
MN 0071344733

II PAST RESPONSE ACTIVITIES (Continued)

01 <input type="checkbox"/> R. BARRIER WALLS CONSTRUCTED 04 DESCRIPTION	NA	02 DATE _____	03 AGENCY _____
01 <input type="checkbox"/> S. CAPPING/COVERING 04 DESCRIPTION	NA	02 DATE _____	03 AGENCY _____
01 <input type="checkbox"/> T. BULK TANKAGE REPAIRED 04 DESCRIPTION	NA	02 DATE _____	03 AGENCY _____
01 <input type="checkbox"/> U. GROUT CURTAIN CONSTRUCTED 04 DESCRIPTION	NA	02 DATE _____	03 AGENCY _____
01 <input type="checkbox"/> V. BOTTOM SEALED 04 DESCRIPTION	NA	02 DATE _____	03 AGENCY _____
01 <input type="checkbox"/> W. GAS CONTROL 04 DESCRIPTION	NA	02 DATE _____	03 AGENCY _____
01 <input type="checkbox"/> X. FIRE CONTROL 04 DESCRIPTION	NA	02 DATE _____	03 AGENCY _____
01 <input type="checkbox"/> Y. LEACHATE TREATMENT 04 DESCRIPTION	NA	02 DATE _____	03 AGENCY _____
01 <input type="checkbox"/> Z. AREA EVACUATED 04 DESCRIPTION	NA	02 DATE _____	03 AGENCY _____
01 <input type="checkbox"/> 1. ACCESS TO SITE RESTRICTED 04 DESCRIPTION	NA	02 DATE _____	03 AGENCY _____
01 <input type="checkbox"/> 2. POPULATION RELOCATED 04 DESCRIPTION	NA	02 DATE _____	03 AGENCY _____
01 <input type="checkbox"/> 3. OTHER REMEDIAL ACTIVITIES 04 DESCRIPTION	NA	02 DATE _____	03 AGENCY _____

III. SOURCES OF INFORMATION (See specific references, e.g., state files, sample analyses, reports)

ELT SSI conducted 5/4/90



POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
WV	D071344733

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION ☐ YES ☒ NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

SEE history section in narrative section 2.3

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

FIT SSI conducted 5/8/90

APPENDIX C

FIT SITE PHOTOGRAPHS

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: NATIONAL STEEL PELLET COMPANY

PAGE 1 **OF** 11

U.S. EPA ID: MND071344733

TDD: F05-8910-016

PAN: FMN0234SB

DATE: MAY 8, 1990

TIME: 1544

DIRECTION OF PHOTOGRAPH:

Northeast

WEATHER

CONDITIONS:

PARTLY CLOUDY,

VARIABLE WINDS, ~57°F

PHOTOGRAPHED BY:

DENEEN BENFORD

SAMPLE ID

(if applicable):

N/A



DESCRIPTION: West Area of NATIONAL Steel Pellet Co., OverBURDEN
Pile can be seen in UPPER RIGHT HAND CORNER

DATE: MAY 8, 1990

TIME: 1550

DIRECTION OF PHOTOGRAPH:

southeast

WEATHER

CONDITIONS:

PARTLY CLOUDY,

VARIABLE WINDS, ~57°F

PHOTOGRAPHED BY:

DENEEN BENFORD

SAMPLE ID

(if applicable):

N/A



DESCRIPTION: West Area - SAND and Gravel pile in CENTER
of photograph.

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: NATIONAL STEEL PELLET COMPANY

PAGE 2 **OF** 11

U.S. EPA ID: MND071344733

TDD: F05-8910-016

PAN: FMN0234SB

DATE: MAY 8, 1990

TIME: 1553

DIRECTION OF PHOTOGRAPH:

Northeast

WEATHER

CONDITIONS:

PARTLY CLOUDY,

VARIABLE WINDS, ~57°F

PHOTOGRAPHED BY:

DENEEN BENFORD

SAMPLE ID

(if applicable):

N/A



DESCRIPTION: West Area - OVERBURDEN PILE IN BACKGROUND.

Note: Person in Photo should not be used as scale against pile.

DATE: MAY 8, 1990

TIME: 1605

DIRECTION OF PHOTOGRAPH:

North

WEATHER

CONDITIONS:

PARTLY CLOUDY,

VARIABLE WINDS, ~57°F

PHOTOGRAPHED BY:

DENEEN BENFORD

SAMPLE ID

(if applicable):

N/A



DESCRIPTION: Sand and gravel in West Area

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: NATIONAL STEEL PELLET COMPANY

PAGE 3 **OF** 11

U.S. EPA ID: MND071344733

TDD: F05-8910-016

PAN: FMN0234SB

DATE: MAY 8, 1990

TIME: 1607

DIRECTION OF PHOTOGRAPH:

East

WEATHER

CONDITIONS:

PARTLY CLOUDY,

VARIABLE WINDS, ~57°F

PHOTOGRAPHED BY:

DENEEN BENFORD

SAMPLE ID

(if applicable):

N/A

DESCRIPTION: Overburden pile in West Area.



DATE: MAY 8, 1990

TIME: 1608

DIRECTION OF PHOTOGRAPH:

west/northwest

WEATHER

CONDITIONS:

PARTLY CLOUDY,

VARIABLE WINDS, ~57°F

PHOTOGRAPHED BY:

DENEEN BENFORD

SAMPLE ID

(if applicable):

N/A

DESCRIPTION: photo taken on last of 5 large overburden piles looking towards WOODED Area.



FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: NATIONAL STEEL PELLET COMPANY

PAGE 4 OF 11

U.S. EPA ID: MND071344733

TDD: F05-8910-016

PAN: FMN0234SB

DATE: MAY 8, 1990

TIME: 1420

DIRECTION OF PHOTOGRAPH:

South

WEATHER

CONDITIONS:

PARTLY CLOUDY,

VARIABLE WINDS, ~57°F

PHOTOGRAPHED BY:

DENEEN BENFORD

SAMPLE ID

(if applicable):

N/A



DESCRIPTION: Electrical Substation near manufacturing facility in East Area.

DATE: MAY 8, 1990

TIME: 1415

DIRECTION OF PHOTOGRAPH:

South

WEATHER

CONDITIONS:

PARTLY CLOUDY,

VARIABLE WINDS, ~57°F

PHOTOGRAPHED BY:

DENEEN BENFORD

SAMPLE ID

(if applicable):

S1



DESCRIPTION: close-up photo of S1 location, inside of the electrical substation in the East Area

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: NATIONAL STEEL PELLET COMPANY

PAGE 5 OF 11

U.S. EPA ID: MND071344733

TDD: F05-8910-016

PAN: FMN0234SB

DATE: MAY 8, 1990

TIME: 1415

DIRECTION OF
PHOTOGRAPH:

South

WEATHER
CONDITIONS:
PARTLY CLOUDY,

VARIABLE WINDS ~57°F

PHOTOGRAPHED BY:
DENEEN BENFORD

SAMPLE ID
(if applicable):
S1



DESCRIPTION: Perspective photo of S1 location, inside the
electrical substation, East Area.

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: NATIONAL STEEL PELLET COMPANY

PAGE 6 **OF** 11

U.S. EPA ID: MND071344733

TDD: F05-8910-016

PAN: FMN0234SB

DATE: MAY 8, 1990

TIME: 1410

DIRECTION OF PHOTOGRAPH:

South

WEATHER

CONDITIONS:

PARTLY CLOUDY,

VARIABLE WINDS, ~57°F

PHOTOGRAPHED BY:

DENEEN BENFORD

SAMPLE ID

(if applicable):

S2



DESCRIPTION: Perspective photo of S2 location, west Area, at the base of the most western overburden pile.

DATE: MAY 8, 1990

TIME: 1410

DIRECTION OF PHOTOGRAPH:

South

WEATHER

CONDITIONS:

PARTLY CLOUDY,

VARIABLE WINDS, ~57°F

PHOTOGRAPHED BY:

DENEEN BENFORD

SAMPLE ID

(if applicable):

S2



DESCRIPTION: Close-up photo of S2 location, at the base of the most western overburden pile in west area.

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: NATIONAL STEEL PELLET COMPANY

PAGE 7 OF 11

U.S. EPA ID: MND071344733

TDD: F05-8910-016

PAN: FMN0234SB

DATE: MAY 8, 1990

TIME: 1430

DIRECTION OF PHOTOGRAPH:

South

WEATHER

CONDITIONS:

PARTLY CLOUDY,

VARIABLE WINDS, ~57°F

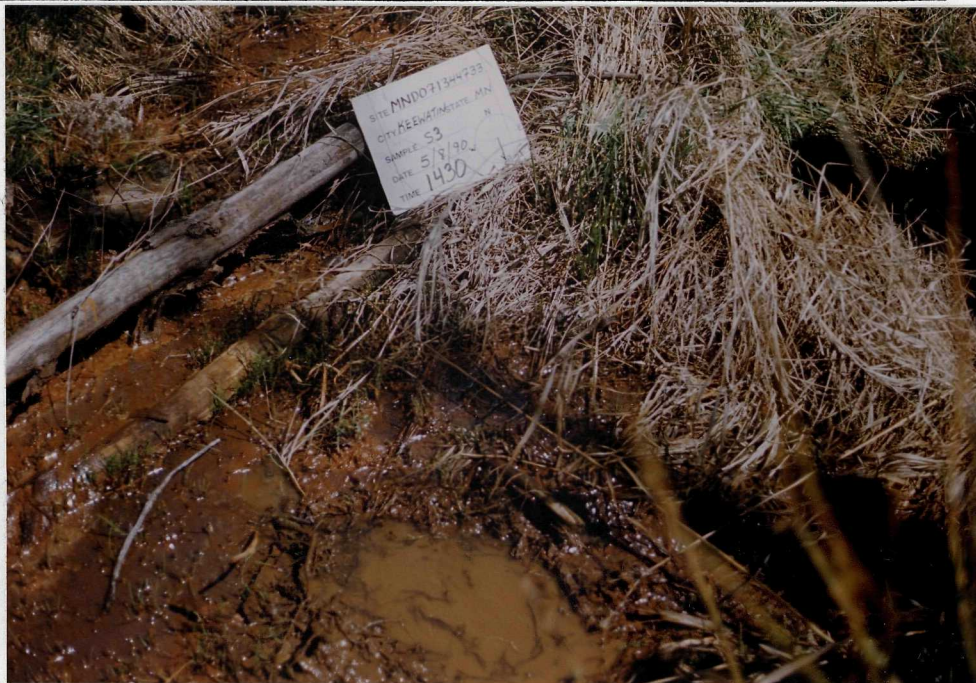
PHOTOGRAPHED BY:

DENEEN BENFORD

SAMPLE ID

(if applicable):

S3



DESCRIPTION: Close-up photo of S3 location, West Area, collected at the base of the most western overburden pile.

DATE: MAY 8, 1990

TIME: 1430

DIRECTION OF PHOTOGRAPH:

South

WEATHER

CONDITIONS:

PARTLY CLOUDY,

VARIABLE WINDS, ~57°F

PHOTOGRAPHED BY:

DENEEN BENFORD

SAMPLE ID

(if applicable):

S3



DESCRIPTION: Perspective photo of S3 location, in West Area.

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: NATIONAL STEEL PELLET COMPANY

PAGE 8 **OF** 11

U.S. EPA ID: MND071344733

TDD: F05-8910-016

PAN: FMN0234SB

DATE: MAY 8, 1990

TIME: 1300

DIRECTION OF PHOTOGRAPH:

Southwest

WEATHER

CONDITIONS:

PARTLY CLOUDY,

VARIABLE WINDS, ~57°F

PHOTOGRAPHED BY:

DENEEN BENFORD

SAMPLE ID

(if applicable):

S4



DESCRIPTION: Close-up photo of S4 location, West Area, INTACT 5-gallon can
(As mentioned in Narrative section 3.3) label read: Whitmore's Pressure-Proof
LUBRICANTS

DATE: MAY 8, 1990

TIME: 1300

DIRECTION OF PHOTOGRAPH:

Southwest

WEATHER

CONDITIONS:

PARTLY CLOUDY,

VARIABLE WINDS, ~57°F

PHOTOGRAPHED BY:

DENEEN BENFORD

SAMPLE ID

(if applicable):

S4



DESCRIPTION: Perspective Photo of S4 location, West Area.

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: NATIONAL STEEL PELLET COMPANY

PAGE 9 **OF** 11

U.S. EPA ID: MND071344733

TDD: F05-8910-016

PAN: FMN0234SB

DATE: MAY 8, 1990

TIME: 1330

DIRECTION OF PHOTOGRAPH:

Southwest

WEATHER

CONDITIONS:

PARTLY CLOUDY,

VARIABLE WINDS, ~57°F

PHOTOGRAPHED BY:

DENEEN BENFORD

SAMPLE ID

(if applicable):

S5



DESCRIPTION: Close-up photo of S5 location, sample collected in west Area, adjacent to a crushed bucket.

DATE: MAY 8, 1990

TIME: 1330

DIRECTION OF PHOTOGRAPH:

Southwest

WEATHER

CONDITIONS:

PARTLY CLOUDY,

VARIABLE WINDS, ~57°F

PHOTOGRAPHED BY:

DENEEN BENFORD

SAMPLE ID

(if applicable):

S5



DESCRIPTION: Perspective view of S5 location, West Area.

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: NATIONAL STEEL PELLET COMPANY

PAGE 10 **OF** 11

U.S. EPA ID: MND071344733

TDD: F05-8910-016

PAN: FMN0234SB

DATE: MAY 8, 1990

TIME: 1510

DIRECTION OF PHOTOGRAPH:

South

WEATHER

CONDITIONS:

PARTLY CLOUDY,

VARIABLE WINDS, ~57°F

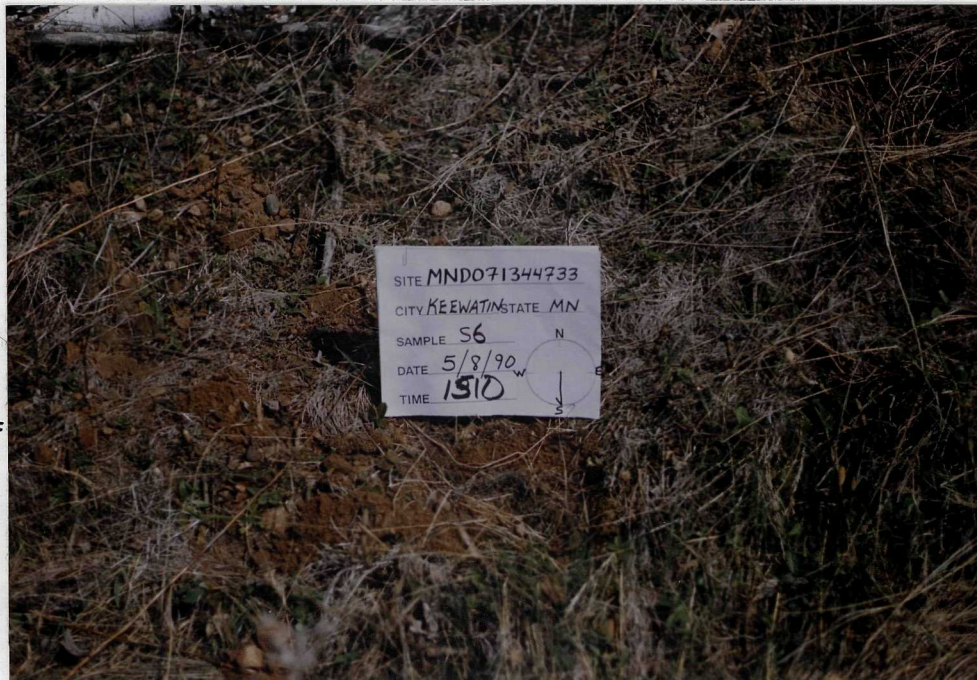
PHOTOGRAPHED BY:

DENEEN BENFORD

SAMPLE ID

(if applicable):

S6



DESCRIPTION: Close-up view of S6 location, West Area.

DATE: MAY 8, 1990

TIME: 1510

DIRECTION OF PHOTOGRAPH:

South

WEATHER

CONDITIONS:

PARTLY CLOUDY,

VARIABLE WINDS, ~57°F

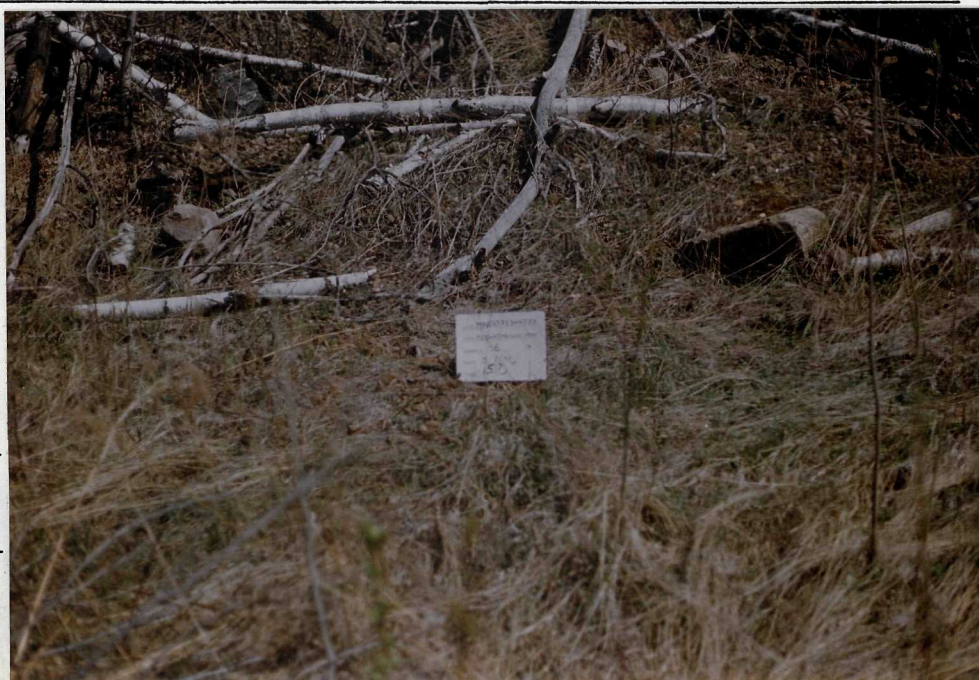
PHOTOGRAPHED BY:

DENEEN BENFORD

SAMPLE ID

(if applicable):

S6



DESCRIPTION: Perspective Photo of S6 location, West Area

FIELD PHOTOGRAPHY LOG SHEET

SITE NAME: NATIONAL STEEL PELLET COMPANY

PAGE 11 **OF** 11

U.S. EPA ID: MND071344733

TDD: F05-8910-016

PAN: FMN0234SB

DATE: MAY 8, 1990

TIME: 1520

DIRECTION OF PHOTOGRAPH:

South

WEATHER

CONDITIONS:

PARTLY CLOUDY,

VARIABLE WINDS, ~57°F

PHOTOGRAPHED BY:

DENEEN BENFORD

SAMPLE ID

(if applicable):

S7



DESCRIPTION: *close-up photo of S7 location, potential background sample, in vicinity of West Area*

DATE: MAY 8, 1990

TIME: 1520

DIRECTION OF PHOTOGRAPH:

South

WEATHER

CONDITIONS:

PARTLY CLOUDY,

VARIABLE WINDS, ~57°F

PHOTOGRAPHED BY:

DENEEN BENFORD

SAMPLE ID

(if applicable):

S7



DESCRIPTION: *perspective photo of S7 location, in vicinity of West area*

APPENDIX D

U.S. EPA TARGET COMPOUND LIST AND
TARGET ANALYTE LIST
QUANTITATION/DETECTION LIMITS

ADDENDUM A

ROUTINE ANALYTICAL SERVICES
CONTRACT REQUIRED DETECTION AND QUANTITATION LIMITS

Contract Laboratory Program
Target Compound List
Quantitation Limits

COMPOUND	CAS #	WATER	SOIL SEDIMENT SLUDGE
Chloromethane	74-87-3	10 ug/L	10 ug/Kg
Bromomethane	74-83-9	10	10
Vinyl chloride	75-01-4	10	10
Chloroethane	75-00-3	10	10
Methylene chloride	75-09-2	5	5
Acetone	67-64-1	10	5
Carbon disulfide	75-15-0	5	5
1,1-dichloroethene	75-35-4	5	5
1,1-dichloroethane	75-34-3	5	5
1,2-dichloroethene (total)	540-59-0	5	5
Chloroform	67-66-3	5	5
1,2-dichloroethane	107-06-2	5	5
2-butanone (MEK)	78-93-3	10	10
1,1,1-trichloroethane	71-55-6	5	5
Carbon tetrachloride	56-23-5	5	5
Vinyl acetate	108-05-4	10	10
Bromodichloromethane	75-27-4	5	5
1,2-dichloropropane	78-87-5	5	5
cis-1,3-dichloropropene	10061-01-5	5	5
Trichloroethene	79-01-6	5	5
Dibromochloromethane	124-48-1	5	5
1,1,2-trichloroethane	79-00-5	5	5
Benzene	71-43-2	5	5
Trans-1,3-dichloropropene	10061-02-6	5	5
Bromoform	75-25-2	5	5
4-Methyl-2-pentanone	108-10-1	10	10
2-Hexanone	591-78-6	10	10
Tetrachloroethene	127-18-4	5	5
Toluene	108-88-3	5	5
1,1,2,2-tetrachloroethane	79-34-5	5	5
Chlorobenzene	108-90-7	5	5
Ethyl benzene	100-41-4	5	5
Styrene	100-42-5	5	5
Xylenes (total)	1330-20-7	5	5

Table A
Contract Laboratory Program
Target Compound List
Semivolatiles Quantitation Limits

COMPOUND	CAS #	WATER	SOIL SEDIMENT SLUDGE
Phenol	108-95-2	10 ug/L	330 ug/Kg
bis(2-Chloroethyl) ether	111-44-4	10	330
2-Chlorophenol	95-57-8	10	330
1,3-Dichlorobenzene	541-73-1	10	330
1,4-Dichlorobenzene	106-46-7	10	330
Benzyl Alcohol	100-51-6	10	330
1,2-Dichlorobenzene	95-50-1	10	330
2-Methylphenol	95-48-7	10	330
bis(2-Chloroisopropyl) ether	108-60-1	10	330
4-Methylphenol	106-44-5	10	330
N-Nitroso-di-n-dipropylamine	621-64-7	10	330
Hexachloroethane	67-72-1	10	330
Nitrobenzene	98-95-3	10	330
Isophorone	78-59-1	10	330
2-Nitrophenol	88-75-5	10	330
2,4-Dimethylphenol	105-67-9	10	330
Benzoic Acid	65-85-0	50	1600
bis(2-Chloroethoxy) methane	111-91-1	10	330
2,4-Dichlorophenol	120-83-2	10	330
1,2,4-Trichlorobenzene	120-82-1	10	330
Naphthalene	91-20-3	10	330
4-Chloroaniline	106-47-8	10	330
Hexachlorobutadiene	87-68-3	10	300
4-Chloro-3-methylphenol	59-50-7	10	330
2-Methylnaphthalene	91-57-6	10	330
Hexachlorocyclopentadiene	77-47-4	10	330
2,4,6-Trichlorophenol	88-06-2	10	330
2,4,5-Trichlorophenol	95-95-4	50	1600
2-Chloronaphthalene	91-58-7	10	330
2-Nitroaniline	88-74-4	50	1600
Dimethylphthalate	131-11-3	10	330
Acenaphthylene	208-96-8	10	330
2,6-Dinitrotoluene	606-20-2	10	330
3-Nitroaniline	99-09-2	50	1600
Acenaphthene	83-32-9	10	330
2,4-Dinitrophenol	51-28-5	50	1600
4-Nitrophenol	100-02-7	50	1600
Dibenzofuran	132-64-9	10	330
2,4-Dinitrotoluene	121-14-2	10	330
Diethylphthalate	84-66-2	10	330
4-Chlorophenyl-phenyl ether	7005-72-3	10	330

Table A
Contract Laboratory Program
Target Compound List
Semivolatiles Quantitation Limits

COMPOUND	CAS #	WATER	SOIL SLUDGE SEDIMENT
Fluorene	86-73-7	10 ug/L	330 ug/Kg
4-Nitroaniline	100-01-6	50	1600
4,6-Dinitro-2-methylphenol	534-52-1	50	1600
N-nitrosodiphenylamine	86-30-6	10	330
4-Bromophenyl-phenylether	101-55-3	10	330
Hexachlorobenzene	118-74-1	10	330
Pentachlorophenol	87-86-5	50	1600
Phenanthrene	85-01-8	10	330
Anthracene	120-12-7	10	330
Di-n-butylphthalate	84-74-2	10	330
Fluoranthene	206-44-0	10	330
Pyrene	129-00-0	10	330
Butylbenzylphthalate	85-68-7	10	330
3,3'-Dichlorobenzidine	91-94-1	20	660
Benzo(a)anthracene	56-55-3	10	330
Chrysene	218-01-9	10	330
bis(2-Ethylhexyl)phthalate	117-81-7	10	330
Di-n-octylphthalate	117-84-0	10	330
Benzo(b)fluoranthene	205-99-2	10	330
Benzo(k)fluoranthene	207-08-9	10	330
Benzo(a)pyrene	50-32-8	10	330
Indeno(1,2,3-cd)pyrene	193-39-5	10	330
Dibenz(a,h)anthracene	53-70-3	10	330
Benzo(g,h,i)perylene	191-24-2	10	330

Table A
Contract Laboratory Program
Target Compound List
Pesticide and PCB Quantitation Limits

COMPOUND	CAS #	WATER	SOIL SEDIMENT SLUDGE
alpha-BHC	319-84-6	0.05 ug/L	8 ug/Kg
beta-BHC	319-85-7	0.05	8
delta-BHC	319-86-8	0.05	8
gamma-BHC (Lindane)	58-89-9	0.05	8
Heptachlor	76-44-8	0.05	8
Aldrin	309-00-2	0.05	8
Heptachlor epoxide	1024-57-3	0.05	8
Endosulfan I	959-98-8	0.05	8
Dieldrin	60-57-1	0.10	16
4,4'-DDE	72-55-9	0.10	16
Endrin	72-20-8	0.10	16
Endosulfan II	33213-65-9	0.10	16
4,4'-DDD	72-54-8	0.10	16
Endosulfan sulfate	1031-07-8	0.10	16
4,4'-DDT	50-29-3	0.10	16
Methoxychlor (Mariate)	72-43-5	0.5	80
Endrin ketone	53494-70-5	0.10	16
alpha-Chlordane	5103-71-9	0.5	80
gamma-chlordane	5103-74-2	0.5	80
Toxaphene	8001-35-2	1.0	160
AROCLOR-1016	12674-11-2	0.5	80
AROCLOR-1221	11104-28-2	0.5	80
AROCLOR-1232	11141-16-5	0.5	80
AROCLOR-1242	53469-21-9	0.5	80
AROCLOR-1248	12672-29-6	0.5	80
AROCLOR-1254	11097-69-1	1.0	160
AROCLOR-1260	11096-82-5	1.0	160

Table A (Cont.)

CONTRACT LABORATORY PROGRAM
 TARGET ANALYTE LIST (TAL)
 INORGANIC DETECTION LIMITS

Compound	Procedure	Detection Limits	
		Water (µg/L)	Soil Sediment Sludge (mg/kg)
aluminum	ICP	200	40
antimony	furnace	60	2.4
arsenic	furnace	10	2
barium	ICP	200	40
beryllium	ICP	5	1
cadmium	ICP	5	1
calcium	ICP	5,000	1,000
chromium	ICP	10	2
cobalt	ICP	50	10
copper	ICP	25	5
iron	ICP	100	20
lead	furnace	5	1
magnesium	ICP	5,000	1,000
manganese	ICP	15	3
mercury	cold vapor	0.2	0.008
nickel	ICP	40	8
potassium	ICP	5,000	1,000
selenium	furnace	5	1
silver	ICP	10	2
sodium	ICP	5,000	1,000
thallium	furnace	10	2
tin	ICP	40	8
vanadium	ICP	50	10
zinc	ICP	20	4
cyanide	color	10	2

3767:1

APPENDIX E

WELL LOGS OF THE AREA OF THE SITE

McClure Well Company

1 OF 3



WELL LOG 1

MAIN OFFICES, SHOPS, YARDS & WAREHOUSES — 2700 EAST 80TH STREET, MINNEAPOLIS, MINN. 55420

OUR NEW LOCATION — ONE BLOCK EAST OF METROPOLITAN STADIUM IN BLOOMINGTON

WATER WELLS — DEEP WELL TURBINE & SUBMERSIBLE PUMPS — EMERGENCY WELL & PUMP SERVICE
TEST DRILLING — FOUNDATION CAISSON DRILLING — WATER WORKS EQUIPMENT & SUPPLIES

MINNEAPOLIS, MINNESOTA
854-5333

ST. PAUL, MINNESOTA
854-5334

City of Keewatin
Keewatin, Minnesota 65753

T57N
R 32W
Sec 24 & 25

Date Started: 11/29/51
Date Completed: 4/25/52

<u>Formation</u>	<u>Thickness</u>	<u>Depth</u>	
Taken from) Clay	40	40	
blue print) Quicksand	10	50	
supplied by) Clay	30	80	
A. Budreau) Quicksand	10	90	
Water Dept.) Clay	90	180	
	Slate	40	220
Slate, blue clay and taconite	4	224	
Taconite-Soft Slate, some water	31	255	
Hard Taconite	10	265	
Taconite and Brown Clay	13	278	
Taconite and Paint Rock	36	314	
Paint Rock	8	322	
Hard Taconite	30	352	
Taconite Softer	5	357	
Hard Taconite	11	368	
Taconite softer some water	11	379	
Hard Taconite	69	448	
Taconite and Brown Clay	22	470	
Brown Clay and Paint Rock	25	495	
Sand and Ore	111	606	



COMPLETE MACHINE SHOP FACILITIES — PARTS AND SERVICE, FOR YOUR PUMPING EQUIPMENT

Nation's Oldest — Northwest's Largest Water Producers

LOG AND DESCRIPTION OF WELL

R 22W

SEC 25a

2 OF 3

LOCATION: Keewatin 1st Ave. & 1st St.

DATE COMPLETED: April 1952 (by McCarthy Well Co., St. Paul)

WELL LOG 1

Elev. of bulkhead on top of
old shaft: 1473

Ground water level
in old shaft at 50'
April 3, 1952

Clay

Quicksand

Clay

Quicksand

Clay

Ground water level
in well at 174'
April 3, 1952

Slate

13" Casing

Concrete bulk head in old shaft

8" Grout
Steel plate
18'-
Clean Hole
to 185'

REMARKS:

- A. 12 1/2" well was drilled through bottom of old shaft.
- B. Well tested April 16 & 17, 1952 from depth of 301 feet.
 1. Pumped 490 GPM for 26 hours.
 2. Pumped 570 GPM for 1 hour before drawing air.

Disseminated cherty
and slaty TACONITE

Ground water level
to well at 174'
April 3, 1952

Slate

Concrete bulk head in old shaft

WELL LOG 1

219

REMARKS:

- A. 12 $\frac{1}{2}$ " well was drilled through bottom of old shaft.
- B. Well tested April 16 & 17, 1952 from depth of 301 feet.
 1. Pumped 490 GPM for 26 hours.
 2. Pumped 570 GPM for 1 hour before drawing air.

Disseminated cherty
and slaty TACONITE

PAINT ROCK

Porous disseminated
TACONITE with inter-
bedded hard cherty
beds & soft sandy
beds.

6 Foot length of 12 $\frac{1}{2}$ bit
at bottom of hole.

400

KESWATIA WELL #2

(Near Carla #2 Mine - drilled in 1951)

0-6	Blue clay
6-10	Blue clay & big stones
10-24	Red clay & big stones, sand & boulders
24-29	Blue clay & big boulders
29-58	Blue clay
58-73	Sandy clay - some gravel
73-82	Muddy sand & big stones
82-90	Hard blue sandy clay
90-115	Hard blue clay
115-124	Slate
124-130	Decomposed taconite
130-133	Solid taconite
133-143	Decomposed taconite
143-165	Painty decomposed taconite
165-170	Decomposed taconite
170-201	Painty decomposed taconite
201-205	Decomposed taconite
205-208	Very hard taconite
208-212	Decomposed painty cuttings
212-220	Sandy decomposed taconite
220-224	Solid taconite, little slate
224-230	Decomposed taconite & little slate
230-345	Slaty taconite
345-350	Decomposed taconite
350-355	Decomposed taconite & paint rock
355-365	Paint rock
365-369	Sand & ore (water)
369-374	Cherty taconite

Most water comes from 355-370

Blue & Red Clay

Sand & Boulders

Sand Gravel &
Boulders

Blue Clay

Virginia Slate

58

82

115

124

Disseminated
Cherty & Slaty
Taconite10" Casing to 373'
(Lower Portion Slotted)

Paint Rock

Porous Disseminated
Cherty Taconite
with Interbedded
Hard Cherty Beds
& Soft Sandy Beds

355

365

373

Drilled in 1951

Proposed May 1958

KEEWATIN WELL #2
(Near Carlz #2 Mine)

473

KEEWATIN VILLAGE WELL
(ADJACENT TO CARLZ NO. 2 MINE)

3 OF 4

WELL LOG 2

COORDINATES _____

ELEVATION _____

DRILLED BY MC CARTHY WELL COMPANY FINISHED SEPT 11, 1951.

CASING: 11 INCH

DRAWDOWN 270 G.P.M. MAXIMUM BEFORE DRAWDOWN.

FIRST HEAVY WATER SEAM AT 370'

195

TOP OF
WATER

373

WELL LOG 2

SECTION A - A
Looking West

Well at Water Tower

Well Near Carls #2

El. 1473

El. 1457

Water Table 1952

Water Table 1951

174

184

370 Water Table Apr. 1958

Drawdown at 180 GPM

359

350 Drawdown at 450 GPM

10" Hole

373

Paint Rock

12 1/2" Hole

6C5

KEEWATIN WATER WELLS

Scale

Horiz. 1"=300'

Vert. 1"=200'

U.S.G.S. Datum

April, 1958

9-25-
Jan 1932
ADP
1932

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES BRANCH

1 OF 2

WELL LOG 3

RECORD OF WELL

Locate well on plat of section.

1. Location: State Minnesota County Itasca
Nearest P. O. Keewatin Direction from P. O. SE 1/4, Sec. 26(?) 21, T. 57 N., R. 22 W.
Distance from P. O. SE 1/4, Sec. 26(?) 21, T. 57 N., R. 22 W. miles; 1/2 mile south Highway 169.
If in city, give street and number celebrity sect 10, 57 N, 21 E

2. Owner: Hanna Ore Mining Co., Mesabi Chief Address Keewatin, Minn.
Driller: Hanna Ore Mining Co. Mine (Washing plant?) Address Keewatin, Minn.

3. Situation: Is well on upland, in valley, or on hillside? casing: 1,504

4. Elevation of top of well: 1,504 ft. above the level of sea
(Above or below) (Sea, depot, lake, or stream)

5. Type of well: drilled; kind of drilling rig used June 1942
(Dug, driven, bored, or drilled) (Solid tool, jetting, rotary, etc.)

6. Depth of well: 100 ft.; year in which well was finished June 1942

Does well enter rock? 6; if so, at what depth? 6 ft.; kind of rock sea

7. Diameter: At top 6 inches; at bottom 6 inches.

8. Principal water bed: Depth to principal water bed ft.; thickness of bed ft.

(Gravel, sand, clay, or rock. If rock, state kind)
If other water supplies were found, give depth to each ft.

9. Casings: Kind 6"; size 100 ft.; between depths of 0 and 100 ft.
Kind ft.; size ft.; between depths of ft. and ft.
Kind ft.; size ft.; between depths of ft. and ft.

Packers (if any): Depth at which packers were used ft.; kind ft.

Screen or Strainer: Was well finished with screen? ft.; kind of screen ft.
length of screen ft.; diameter inches; size of openings ft.

10. Head: Does well at present overflow without pumping? ft.; did it overflow when new? ft.
if flowing, give pressure lb. per sq. inch; or height water will rise in a pipe ft. above surface;
original pressure or head ft.; if not flowing, give water level in well 17 ft. below surface.

11. Pump: Is the well pumped? yes; kind of pump Myers Plunger Deep-well type
size or capacity of pump 5 g.p.m.; kind of power ft.

12. Yield: Natural flow at present (if any) gallons per minute; original flow gallons per minute
well has been pumped at gallons per minute continuously for hours;
quantity of water ordinarily obtained from well gallons per day.

13. Use: For what purpose is the water used? Industrial water supply

14. Quality of the water: ft.; is there an analysis? ft.

(Hard or soft, fresh or salty, etc.)
15. Cost of well, not including pump: ft. Temperature of water ° F.

Name of person filling blank ft.

Date June 1942 Address ft.

On the back of this sheet give the record of the beds through which the well passes and any other facts not given above.

6-9042

WELL LOG and REPORT

2 OF 2

For method of making report, refer to Instruction Sheet.

WELL LOG

In this column indicate the kind of casing, liner, shoe and other accessories used.

WELL DIAGRAM
Use a red line to show casing or liner pipe. Use black for drill or borehole.

In this column state the kind of formations penetrated, their thickness in feet and if water bearing.

**Record of
FINAL
Pumping test**Inches Diameter
2 3 4 5 6 8 10 12 14 16 18 DepthSurface Clay
Hard PanDuration of test: None
Time Ended
Time Started
Hours Depth of pump in well. Ft. 92'Pumping rate 5 G.P.M.
G.P.M. Static water-level below surface. Ft. 17Water-level below surface while pumping. Ft. Difference in level. Ft. Time required for recovery after pumping ceases. Condition of water at end of test:
Clear
Cloudy
Turbid
(Indicate by x)Was the well sterilized?
Yes No X
(Indicate by x)Where were samples sent? NoDate No date

Remarks: (Note any special conditions)

Well not in service

Was the well sealed on completion?
Yes X No
(Indicate by x)How high was casing-pipe left above grade? 18"Date well was completed
June 1942Name of contractor
Hanna Ore Mining Co.Name of person filling in this form
Samuel Kees
Signature

100'

100

150

200

400

800

1200

FORM 9-1642
(1-68)Well No. 57.22.26.bbc1

WELL SCHEDULE

U. S. DEPT. OF THE INTERIOR

GEOLOGICAL SURVEY

WATER RESOURCES DIVISION

MASTER CARD

Record YESSAK Source of data CRASH Date 1/22/76 Map Keewatin 7 1/2
 State Minn. County Itasca Sequential number 311

Latitude: 47° 23' 50" N Longitude: 093° 06' 35" W

Local well number: 2-570-220-26-SW-NW-NW-4th

Local use: HANNA ORE MINING Owner or name: Hanna Ore Mining Co.

Owner or name: HANNA ORE MINE Address: Keewatin, Minn.

Ownership: County, Fed Gov't, City, Corp or Co, Private, State Agency, Water Dist. (N)

Use of water: (A) Air cond, Bottling, Comm, Dewater, Power, Fire, Dom, Irr, Ind, P S, Rec, (B) Stock, Instit, Unused, Repressure, Recharge, Desal-P S, Desal-other, Other (R)

Use of well: (A) Anode, Drain, Seismic, Heat Res, Obs, Oil-gas, Recharge, Test, Unused, Withdraw, Waste, Destroyed (W)

DATA AVAILABLE: Well data 9 Freq. W/L meas.: 0 Field aquifer char. 72

Hyd. lab. data: 73

Qual. water data: type: 74

Freq. sampling: 75 Pumpage inventory: yes period: no 76

Aperture cards: 77

Log data: Driller's log 78

WELL-DESCRIPTION CARD

NAME AS ON MASTER CARD Depth well: 230 ft 230 Meas. accuracy 6

Depth cased: (first perf.) 35 ft Casing type: 36 Diam. 37 in

Finish: (C) porous concrete, (F) gravel v. (perf.), (G) gravel v. (screen), (H) horiz. gallery, (I) open end, (J) perf., (K) screen, (L) ad. pt., (M) shored, (N) open hole, (O) other 31

Method: (A) air bored, (B) cable, (C) dug, (D) hvd jetted, (E) air reverse, (F) trenching, (G) driven, (H) drive wash, (I) other 32

Date Drilled: Aug. 1931 9:31 Pump intake setting: 33 ft 34

Driller: Hanna Ore Mining Co. Keewatin, Minn.

Lift (type): (A) air, bucket, (B) jet, (C) multiple, (D) multiple, (E) none, (F) piston, (G) rot, (H) submerg, (I) turb, (J) other 39 Deep 40

Power (type): (A) diesel, (B) elec, (C) gas, (D) gasoline, (E) hand, (F) gas, (G) wind, (H) H.P. 41 Trans. or meter no. 42

Descript. MP 1495 above LSD, Alt. MP 43

Alt. LSD: 1495 Accuracy: 44

Water Level 150-160 ft above MP; LSD 150 Accuracy: 45

Date meas: 35 Yield: 20 gpm 40 Method determined 41

Drawdown: 35 ft Accuracy: 42 Pumping period 43 hrs 44

QUALITY OF WATER DATA: Iron 45 Sulfate 46 Chloride 47 Hard. 48

Sp. Conduct. 49 K x 10 50 Temp. 51 Date sampled 52

Taste, color, etc. 53

Well No.

Well No. _____

WELL LOG

Latitude-longitude _____
 d m s N S d m s

HYDROGEOLOGIC CARD

SAME AS ON MASTER CARD
 Physiographic Province: 12 Section: _____
 Drainage Basin: B Subbasin: 28 F _____
 (D) (C) (E) (F) (H) (K) - (L)
 Top of depression, stream channel, dunes, flat, hilltop, sink, swamp,
 well site: (Q) (P) (S) (T) (U) (V) _____
 offshore, pediment, hillside, terrace, undulating, valley flat _____
 MAJOR
 AQUIFER: _____
 system series _____ aquifer, formation, group _____
 Lithology: _____ Origin: _____
 Length of well open to: _____ ft Depth to top of: _____ ft
 MINOR
 AQUIFER: _____
 system series _____ aquifer, formation, group _____
 Lithology: _____ Origin: _____
 Length of well open to: _____ ft Depth to top of: _____ ft
 Intervals Screened: _____
 Depth to consolidated rock: _____ ft Source of data: _____
 Depth to basement: 90 ft 90 Source of data: D
 Surficial material: _____ Infiltration characteristics: _____
 Coefficient Trans: _____ gpd/ft Coefficient Storage: _____
 Coefficient Perm: _____ gpd/ft²; Spec cap: _____ gpm/ft; Number of geologic cards: _____

Log

Depth Thickness

Hardpan clay

10

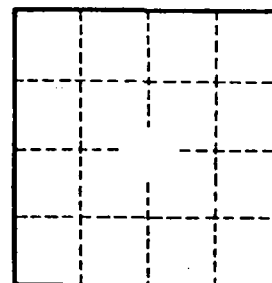
20

Iron ore formation

90-230

140

The well was sealed on completion



Well No. _____

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES BRANCH

1 OF 2

WELL LOG 5

RECORD OF WELL

			(X)

Locate well on plat of section.

Location: State Minnesota County Itasca
Nearest P. O. Keewatin Direction from P. O. _____
Distance from P. O. _____ miles; SE 1/4 sec. 23, T. 57 N., R. 22 W.
If in city, give street and number _____

2. Owner: International Harvester Co., Address Keewatin, Minn.
Sargent Mine
Driller: _____ Address _____

3. Situation: Is well on upland, in valley, or on hillside? _____

4. Elevation of top of well ^{casing} 1,526 ft. above the level of sea
(Above or below) _____ (Sea, depot, lake, or stream)

5. Type of well: drainage shaft; kind of drilling rig used _____
(Dug, driven, bored, or drilled) _____ (Solid tool, jetting, rotary, etc.)

6. Depth of well: 215 ft.; year in which well was finished _____

Does well enter rock? _____; if so, at what depth? _____ ft.; kind of rock _____

7. Diameter: At top _____ inches; at bottom _____ inches.

8. Principal water bed: _____
(Gravel, sand, clay, or rock. If rock, state kind)

Depth to principal water bed _____ ft.; thickness of bed _____ ft.

If other water supplies were found, give depth to each _____

9. Casings: Kind _____; size 6"; length 215 ft.; between depths of 0 and 215 ft.

Kind _____; size _____; length _____ ft.; between depths of _____ and _____ ft.

Kind _____; size _____; length _____ ft.; between depths of _____ and _____ ft.

Packers (if any): Depth at which packers were used _____; kind _____

Screen or Strainer: Was well finished with screen? _____; kind of screen _____;

length of screen _____ ft.; diameter _____ inches; size of openings _____

10. Head: Does well at present overflow without pumping? _____; did it overflow when new? _____;

^{Total head 215}
if flowing, give pressure _____ lb. per sq. inch; or height water will rise in a pipe _____ ft. above surface;

original pressure or head _____; if not flowing, give water level in well _____ ft. below surface.

11. Pump: Is the well pumped? yes; kind of pump 1 centrifugal & 1 plunger (standby);

size or capacity of pump each 450-500 g.p.m.; kind of power electric

12. Yield: Natural flow at present (if any) _____ gallons per minute; original flow _____ gallons per minute;

^{is}
well ~~has been~~ pumped at 450 gallons per minute continuously for _____ hours;

quantity of water ordinarily obtained from well _____ gallons per day.

13. Use: For what purpose is the water used? mine drainage, domestic supply, four houses, and

make up water for plant of Mesabi-Chief mine to the
14. Quality of the water: _____; is there an analysis? south.

(Hard or soft, fresh or salty, etc.)

15. Cost of well, not including pump: _____ Temperature of water _____ ° F.

Name of person filling blank _____

Date July 16, 1942 Address _____

9-185
(October 1950)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WATER RESOURCES DIVISION

WELL SCHEDULE

Date 10-3-61, 19____ Field No. _____
Record by RDC Office No. _____
Source of data M. A. Hanna Co. (Cal Day) Cooley

1. Location: State Minn. County Itasca
Map 3705/1670W Keweenaw Quad
_____ $\frac{1}{4}$ _____ $\frac{1}{4}$ sec. _____ T _____ N _____ E
S _____ R _____ W
2. Owner: _____ Address _____
Tenant _____ Address _____
Driller _____ Address _____
3. Topography _____
4. Elevation 901.3 ft. above _____
_____ ft. below _____
5. Type: Dug drilled, driven, bored, jetted _____ 19 4
6. Depth: Rept. _____ ft. Meas. _____ ft.
7. Casing: Diam. _____ in., to _____ in., Type _____
Depth _____ ft., Finish _____
8. Chief Aquifer _____ From _____ ft. to _____ ft.
Others _____
9. Water level 162' (1950) rept. _____ 19____ above _____
_____ meas. _____ below _____
_____ which is _____ ft. above surface
_____ below surface
10. Pump: Type Pearless 4-1/2" Capacity 50 gpm @ 20' G. M. _____
Power: Kind _____ Horsepower _____
11. Yield: Flow _____ G. M., Pump _____ G. M., Meas., Rept. Est. _____
Drawdown _____ ft. after _____ hours pumping _____ G. M.
12. Use: Dom., Stock, PS., RR., Ind., Irr., Obs. _____
Adequacy, permanence _____
13. Quality _____ Temp _____ °F.
Taste, odor, color _____ Sample Yes _____
No _____
Unfit for _____
14. Remarks: (Log, Analyses, etc.) _____

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